The Oil and Gas Journal

PRODUCING REFINING MARKETING

VOL. 24. NO. 52. TULSA, OKLAHOMA, MAY 20, 1926

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Refinery Section Starts on Page 192

Crude Prices Increased; Production Up

Highest daily average estimated production week ended May 30, 1925, 2,347,984 bbls. Lowest in 1925, January 3, 1,911,730 bbls.

Intensive Drilling Activity Gives Promise of Considerable Flush Output. Stocks a Factor

By Andrew M. Rowley

Highest daily average estimated light oil production in 1925, week ended January 17, 1,525,220 bbls. Lowest in 1925, July 18, 1,374,173 bbls.

Crude price increases were announced during the past week by the major purchasers in all the principal fields of the country except Pennsylvania and California. At the same time, production of crude petroleum averaged more than 2,000,000 barrels daily for the first time this year and developments in a number of areas indicated considerable flush production may be expected to result from present activities. In addition, oil is now being shipped through the new pipe line in Colombia and it is expected tankers will begin carrying this crude to the Eastern seaboard about June 1. The line can carry 30,000 barrels daily and there is sufficient crude in storage to keep the line supplied.

While the period of peak demand for crude petroleum and its products has opened, it must be remembered there is a record quantity of gasoline in storage which will be bound to have its effect upon the crude oil market, and there is no indication production of crude will show any material decline for some time to come. Drilling throughout the country is showing more activity than it has for a long time, while the number of wildcat tests being drilled now is probably greater than at any other time in the industry's history. These wildcats cover a wide area and results already obtained give promise of new producing horizons which will yield considerable oil. The old Spindletop Pool in the Gulf Coast territory is but one example, production there being greater now than for the past 15 years owing to the discovery of a deeper producing sand. The big increase in production in the Garber Field in Oklahoma last week came from the Hoover sand, a shallower formation. The Texas Panhandle is still registering big increases in output, jumping from 17,000 to 25,000 barrels in one week. The finding of a big gas well in the Oklahoma Panhandle will stimulate drilling in that section.

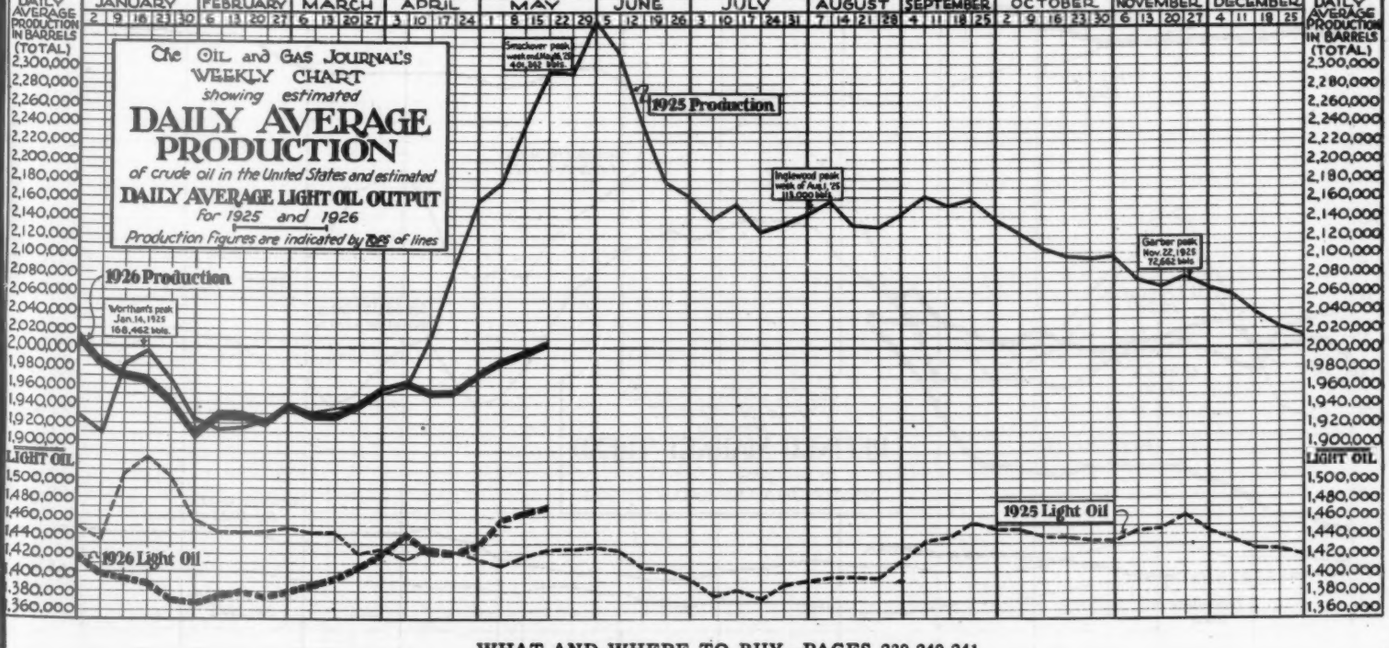
The general petroleum situation is good but it would be well for the entire industry not to be overly optimistic, because of the large quantities of crude and gasoline in storage and because of the good indications for a large flush production scattered over many areas.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity crude oil in the United States for week ended May 15, and a comparison with the previous week follows:

	May 15		May 8	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	37,635	.....	38,120	.....
Burbank	41,080	.....	41,130	.....
Other Osage Fields	33,440	.....	33,390	.....
Cushing and Shamrock	21,720	.....	21,770	.....
Bristow and Eastern Bristow	29,745	.....	29,760	.....
Cromwell	18,295	.....	18,315	.....
Papoose	11,945	.....	12,140	.....
Garber	43,640	.....	39,705	.....
Blackwell-Braman	19,730	.....	18,790	.....
Davenport	12,880	.....	13,630	.....
Wewoka	32,910	.....	32,125	.....
Northern Miscellaneous	99,770	.....	101,050	.....
Southern Fields	64,995	.....	65,950	.....
Total Oklahoma	467,785	.....	465,875	.....
North Louisiana	55,950	.....	55,040	.....
Arkansas—				
Smackover Light	17,470	.....	17,505	.....
Smackover Heavy	.....	135,455	.....	134,720
Miscellaneous	25,900	.....	23,520	.....
Total Arkansas	43,370	135,455	41,025	134,720
North Central Texas	194,689	.....	186,073	.....
Powell	30,300	.....	30,300	.....
Mexia, Currie, Richland, etc	16,000	.....	15,620	.....
Wortham	9,660	.....	9,300	.....
Kansas	104,965	.....	105,190	.....
Total Mid-Continent Area	922,719	135,455	908,423	134,720
Gulf Coast	.....	102,880	.....	96,060
Southwest Texas	.....	39,790	.....	38,805
Eastern	104,900	.....	103,825	.....
Rocky Mountain Area	100,565	.....	111,480	.....
California—				
Santa Fe Springs	49,500	.....	49,500	.....
Long Beach	104,000	.....	104,000	.....
Huntington Beach	44,500	.....	45,000	.....
Torrance	5,500	22,000	5,500	22,000
Dominguez	20,000	.....	20,500	.....
Rosecrans	18,000	.....	19,000	.....
Inglewood	30,500	21,000	30,500	22,000
Ventura Avenue	30,000	.....	27,500	.....
Remainder of State	41,500	215,500	42,500	216,000
Total California	343,500	258,500	344,000	260,000
Total United States	1,471,684	536,625	1,467,728	529,585
Grand Total	2,008,309		1,997,313	

Total Increase, 10,996 Bbls.; Light Oil Increase, 3,956 Bbls.



WHAT AND WHERE TO BUY—PAGES 239-240-241

Group 3 Market Slow After Advances

Gasoline and Kerosene Prices Higher. Other Products Unchanged. Lack of Spot Demand Draws Concessions

By Nell Williams

Advances in Mid-Continent crude and in tankwagon postings throughout the territory of the Standard Oil Co. of Louisiana the past week were reflected in the Oklahoma (Group 3) refined market by higher refinery prices on gasoline and kerosene.

As usual refinery markets were very disturbed following these crude and tankwagon changes and even late Tuesday a definite trend was not certain. The crude advance of 25 cents Saturday and the tankwagon boost of 1 cent in both gasoline and kerosene effective Monday necessarily forced a revision of refinery levels which will take several days to adjust.

Refiners generally were attempting to absorb from three-quarters to a cent on the advance on gasolines and a quarter-cent on kerosenes but the lack of any substantial buying on the spot market resulted in some concessions under these quotations.

Considerable material was being taken out Saturday and Monday but a large part of this was on instructions, orders for which were placed previous to the changes. A number of buyers also were attempting to cover as soon as possible on previous sales.

The ability of refiners to hold gasoline and kerosene at their present higher prices will depend entirely on consumption developments in the next few days, it is generally admitted. The fact that the present spot demand is comparatively light may cause refinery markets to settle at slightly lower prices than some of the present higher quotations.

REFINED MARKET BAROMETER

Refined markets of the country are extremely unsettled as a result of crude advances in nearly all areas. Quotations, particularly on gasoline and kerosene, are higher in nearly all refinery centers, but a lack of buying activity in the principal areas has produced a feeling of instability with some price concessions. The actual motor consumption of gasoline is reported heavy, but the supply is said to be very large. Kerosene developed a slightly easier tone in the Mid-Continent, although quotations were up due to tankwagon advances. Fuel oil is spotted with the product firm in eastern and Gulf Coast centers, but inactive in the Mid-Continent and Middle West. Gas oil and distillates are generally firm because of the continued demand for cracking stock. Natural gasolines are slow generally. Lubricants show improvement, but the more settled tone so far has not caused price advances in the Mid-Continent.

Mid-Continent — Mid-Continent refined markets unsettled following crude and tankwagon advances. Gasoline prices up from a quarter to a cent in all areas, but the product is sluggish, particularly higher gravities. Kerosene easier, but prices firm. Fuel oil softer. Gas oil and distillates unchanged. Natural gasolines quiet, but prices slightly higher. Lubricants unchanged.

Atlantic Seaboard—Markets uncertain.. Gasoline consumption good, but supply large. Kerosene, gas oil and fuel oil firm. Lubricants show some improvement.

Pennsylvania—Cylinder stocks and wax slow, but other products strengthened by crude raises. Gasoline demand better. Kerosene still scarce.

Chicago—Refined prices stronger, but spot demand slow. Kerosene active. Fuel oil sluggish. Lubricants higher from some sources.

California—Gasoline demand improves locally. Natural gasolines unchanged, with strengthening prevented by competition of Oklahoma product.

Gulf Coast—Refined markets stronger with crude advances. Stocks of fuel being reduced rapidly.

The crude advance coming at a time when refined markets were dull and prices weak is an important factor to be considered in the present situation, market students point out. The slow movement of all products the previous two weeks was bringing to light increasing quantities of gasoline and unless consumption increases immediately this material still may be available regardless of the crude advance.

While prices generally are considered firm, refiners admit they are facing a crisis with the increased cost of raw material making the margin of profit narrower unless they are able to command still higher prices for their products.

Gasoline Must Stand Increase

It is known that at this time of year the bulk of any advances in crude must be borne by gasoline as little help can be expected from most other products from now on. Considering the percentage of gasoline production from a barrel of crude, at least a 1-cent increase in refinery gasoline should be maintained refiners figure to pay the additional 25-cent cost of crude. For smaller refiners with only skimming plants, a 2-cent advance would not be too great, it is claimed.

Despite the slowness of buying and the higher crude prices refiners on the whole are not alarmed and are almost universally optimistic over the situation. Although it is reported that jobbers stocked up with ample gasoline during a buying wave several weeks ago refiners believe that as soon as markets become stabilized and motor consumption shows further increase sufficient buying will materialize to restore the market to a "fair" level.

It is generally expected that refiners will have a little difficulty in moving gasoline until the last of the month due to the fact that jobbers are stocked up and several large marketers have considerable material bought long before the crude advance which must be taken out in the next two weeks.

The latter obstacle may prove the most serious as one large marketing company in particular has an unusually large amount of gasoline, purchased early in the month at 10½ to 11 cents, which can be sold far below present refinery quotations.

However, refiners believe all this material will be cleaned off the market

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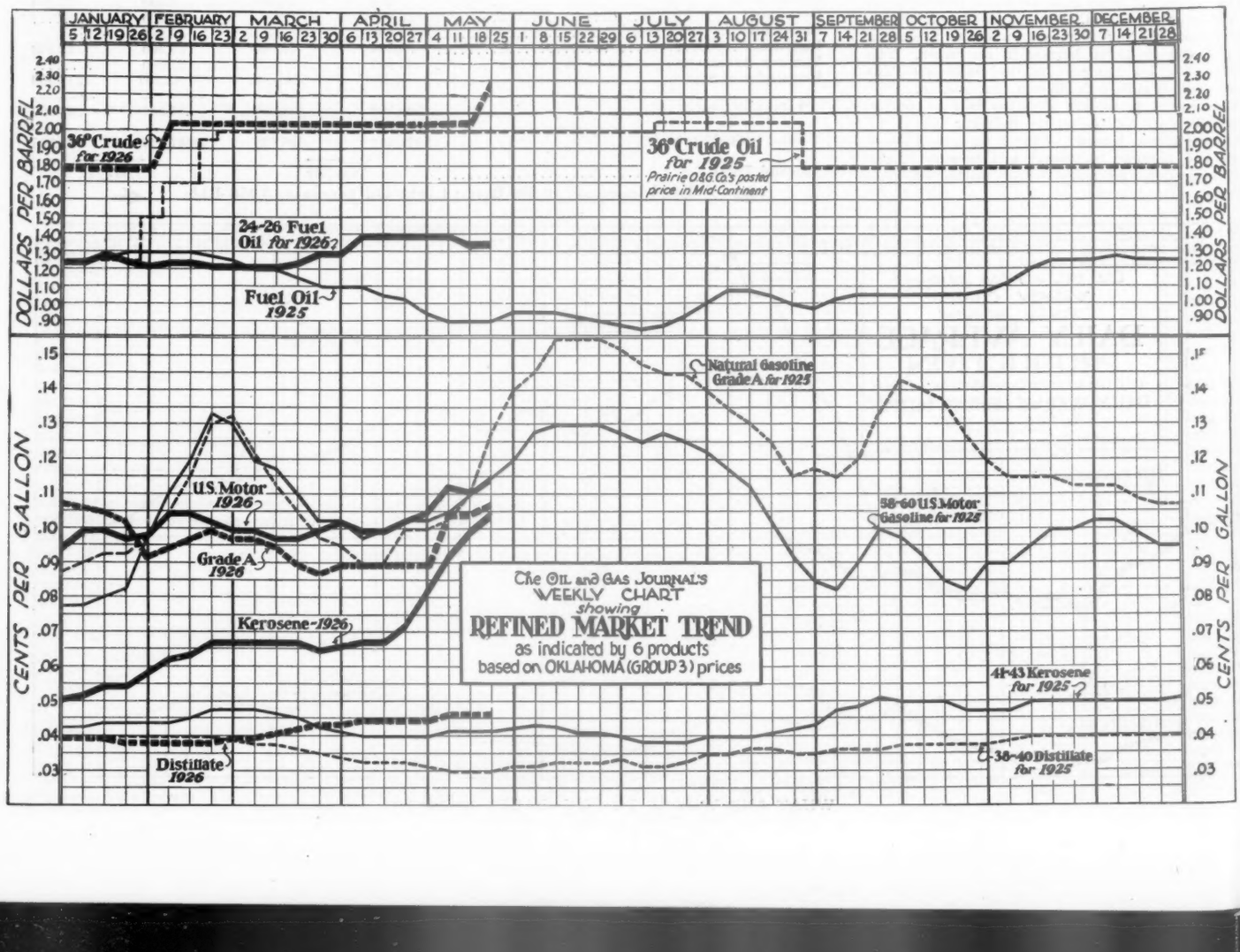

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DOLLARS PER BARREL
CENTS PER GALLON
36° Crude for 1926
24-26 Fuel Oil for 1926
Fuel Oil 1925
36° Crude Oil for 1925
Prairie O&G Co's posted price in Mid-Continent
Natural Gasoline Grade A for 1925
U.S. Motor 1926
Grade A 1926
Kerosene-1926
Distillate 1926
38-60 U.S. Motor Gasoline for 1925
41-43 Kerosene for 1925
38-40 Distillate for 1925
The Oil and Gas Journal's WEEKLY CHART showing REFINED MARKET TREND as indicated by 6 products based on OKLAHOMA (GROUP 3) prices

Cracking Capacity 980,960 Barrels

Survey Covering United States Shows Pressure Still Throughput Near Million Daily. Capacities Are Given

By C. O. Willson

The present cracking capacity of the refineries in United States, including the units now under construction, is 980,960 bbls. daily. This figure is based on a nation-wide survey just completed by The Oil and Gas Journal in which the cracking of each of the 150 operating refineries having cracking units was obtained.

The crude skimming capacity of these same plants is 1,951,960 bbls. daily. Thus the facilities to secure gasoline and other productions through processes operating at high temperatures and pressures are approximately one-half the capacity of the crude skimming equipment operated at atmospheric pressure and relatively low temperatures. This report covers only the refineries with cracking processes. It does not include the 205 operating refineries without cracking processes which have a crude skimming capacity of 817,470 bbls. daily. The data do not include the 160 shut-down refineries—six of which have cracking processes—with a skimming capacity of 299,340 bbls. daily. Practically all of the cracking equipment under construction and which is considered in this report will be in operation within 60 days.

FIRST CRACKING SURVEY

In this issue, The Oil and Gas Journal gives the first survey of cracking capacities of refineries ever published. The names of the companies, cracking capacities of their plants, crude skimming capacities and type of cracking process for all companies having cracking equipment is given.

The report is based on answers received from questionnaires sent out to all refinery organizations. The report on cracking supplements the annual refinery survey which was published in the May 6 issue (page 29) of The Oil and Gas Journal.

The accompanying report giving cracking capacities by plants supplements the annual refinery survey which was published in the May 6 issue of The Oil and Gas Journal. In the latter report the name of the companies, refinery location, crude capacity, type of refinery and type of cracking installation were given, including operating and shut-down refineries.

It was decided also to determine the actual rated cracking capacity in United States after the annual survey had again shown that there had been relatively little change in the crude capacities of the operating plants. In the three surveys—1924, 1925 and 1926—made by The Oil and Gas Journal, a majority of the refining organizations in reporting their plants have shown little or no change in the crude capacities of their plants.

The explanation lies in more efficient plant operations centering around the rapid expansion of cracking processes which have made it possible for most refiners to increase their output of gasoline and other light end products without adding to their crude capacities. This situation is reflected in the Bureau of Mines monthly reports which show that gasoline production in 1925 was 44 per cent greater than in 1923, while the crude runs to stills were only 27 per cent greater.

This obviously means that to the student of refinery statistics increases in cracking facilities are more important than changes in crude capacities. In other words, the chief development in refinery practices has been the securing of maximum yields per barrel of crude throughput, the general trend in refinery operations previous to 1923.

REFINERY CRACKING CAPACITIES IN UNITED STATES—RECAPITULATION BY STATES

State—	No. Refineries With Crack'g Process	*Crude Skimming Cap'y, Bbls.	Cracking Capacity Bbls.	Total Capacity
Arkansas	5	12,600	18,000	30,600
California	7	330,000	50,600	380,600
Colorado	1	1,500	.....	1,500
Georgia	1	4,500	600	5,100
Illinois	7	88,000	55,000	143,000
Indiana	3	75,000	91,000	166,000
Kansas	15	109,500	59,600	169,100
Kentucky	6	20,200	9,600	29,800
Louisiana	4	103,500	40,600	144,100
Maryland	3	49,000	22,000	71,000
Massachusetts	2	23,500	5,000	28,500
Missouri	2	14,000	16,000	30,000
Montana	1	2,500	800	3,300
New Jersey	5	221,000	86,100	307,100
New York	2	31,000	10,000	41,000
Ohio	8	38,200	38,000	76,200
Oklahoma	24	202,800	93,550	296,350
Pennsylvania	19	111,160	70,400	181,560
Rhode Island	1	10,000	6,700	16,700
South Carolina	1	10,000	13,000	23,000
Texas	23	386,500	225,750	612,250
Utah	1	4,500	4,000	8,500
West Virginia	1	4,000	2,160	6,160
Wyoming	8	99,000	62,500	161,500
Total	150	1,951,960	980,960	2,932,920

*Does not include the capacities of operating plants without cracking equipment or shut-down plants.

CRACKING CAPACITIES BY STATES

CRACKING PROCESSES

Following is a list of cracking processes, including owners and sales representatives:

Burton—Standard Oil Co. of Indiana, Chicago, Ill.

Cross—Gasoline Products Co., Kansas City, Mo.; M. W. Kellogg Co., New York City. Latter company controls process covered by Black patents.

Dubbs—Universal Oil Products Co.

Fleming—M. W. Kellogg Co., New York City.

Holmes-Manley—The Texas Company, New York City.

Isom—Sinclair Refining Co., New York City.

Jenkins—Jenkins Petroleum Process Co., Chicago; Graver Corp., Chicago, sales representative.

Tube & Tank—Standard Oil Co. of New Jersey, New York City.

In addition to the above, there are several processes listed in the following tables which are generally owned by the companies operating the plants at which they are installed:

ARKANSAS

Company and plant location—	Dy. Crude Capacity Bbls.	Dy. Crack'g Capacity Bbls.	Type of Cracking Plant
Houston Oil Co., Camden	.....	3,000	Dubbs
Kettle Creek Refining Co., El Dorado	4,000	2,000	Dubbs
Lion Oil Refining Co., El Dorado	10,000	5,000	Burton
Ouachita Valley Refining Co., El Dorado	1,500	800	Dubbs
Root Refineries, El Dorado	2,500	1,800	Dubbs
Total	18,000	12,600	

CALIFORNIA

Associated Oil Co., Avon	50,000	800	Dubbs
Pan American Petroleum Co., Watson	50,000	15,000	Black
Richfield Oil Co., Rioco	27,000	8,000	Cross

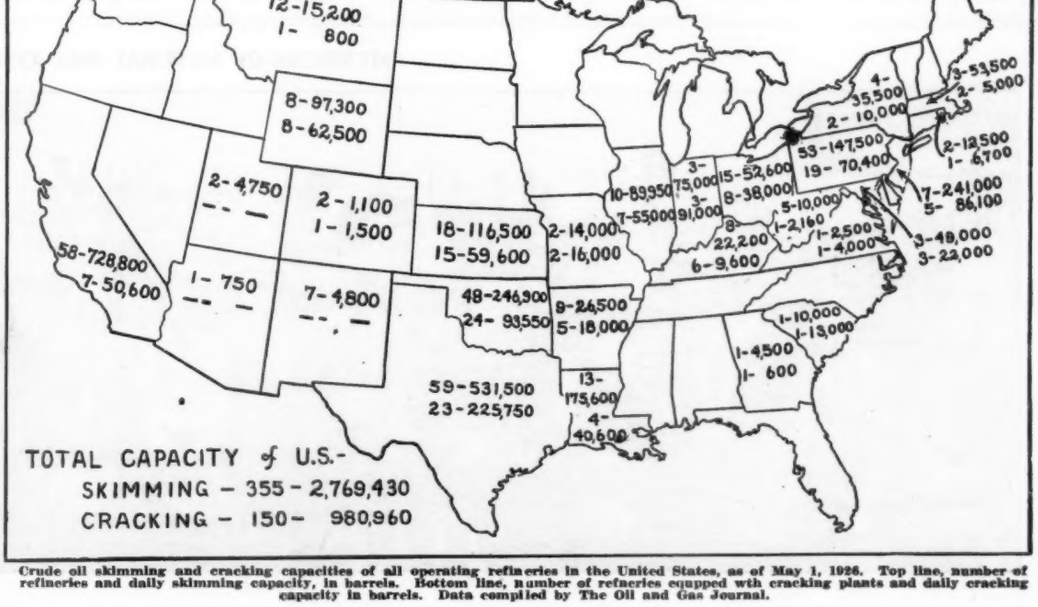
(Continued on Page 156)

To those not familiar with refinery operations an explanation of what is meant by cracking capacity will probably aid in understanding the data given in Table 1 and the tables showing the capacities by companies. The cracking capacity of a refinery differs somewhat from the crude skimming capacity. The crude capacity of a refinery is the amount of crude oil a plant is able to handle daily. This is based on crude oil only and does not take into consideration the fractions of crude which are rerun to secure finished products after the skimming operation.

In making their reports on cracking capacity it is apparent that many refiners took into consideration the stock which is rerun through their processes as well as the fresh charging stock. In the operation of most cracking processes the maximum recovery of gasoline is not obtained until fractions of the fresh charging stock are recycled through the plants several times. At some plants it is customary to add the residuum left in the cracking still after a run to the fresh charging stock of another cycle. In rerunning the pressure distillate to secure the finished gasoline it is also customary to take the residuums or bottom and mix with the fresh charging stock. This mixing and recycling continues until the maximum gasoline yield is obtained and nothing is left but coke or unrefinable bottoms.

Cracking capacities as given in this report take into consideration both the fresh and rerun stock. A plant operating at 1,000 bbls. a day might be using only 500 bbls. or less of fresh charging stock, the remainder being rerun material from previous operations. It would, however, be possible to use nothing but fresh stock provided the plant operator was satisfied

(Continued on Page 126)



Crude oil skimming and cracking capacities of all operating refineries in the United States, as of May 1, 1926. Top line, number of refineries and daily skimming capacity, in barrels. Bottom line, number of refineries equipped with cracking plants and daily cracking capacity in barrels. Data compiled by The Oil and Gas Journal.

Good Attendance At Gas Convention

All Areas Well Represented by Leading Officials and Supply Company Executives. Consider New Division

By James McIntyre

The probable formation of a southwestern division of the Natural Gas Association of America, with a southwestern headquarters and secretary, the membership to be made up of natural gas men from Kansas, Oklahoma, Texas, Louisiana and Arkansas, was the big feature of the twenty-first session of the Natural Gas Association of America held in Tulsa this week. The matter was put before the board of directors of the association Monday evening, and a committee was appointed to give the project full consideration. The importance of such a subsidiary body was emphasized by President A. W. Leonard in the course of his speech on Tuesday at the opening session of the convention when he said:

"If we intend to continue the Natural Gas Association of America as a separate organization, then let us seek means for improving its value. Let us get action on the proposed southwestern secretaryship and plan to bring the gas men in this state and the adjoining states of Kansas, Texas, Louisiana and Arkansas more firmly into the national association. These states have methods of handling gas production, transmission and distribution that are peculiar to this territory. We hope some of them are new and at least interesting to you."

Mr. Leonard in his speech, which is published in full elsewhere in this issue, went into the matter of associational usefulness very thoroughly. The object of the southwestern division is, however, not alone an organization for the solution of local problems and of local getting together, but to strengthen the national association by adding to its memberships many gas men who have thus far been out of touch with it. That President Leonard's suggestion met with favor may be taken for granted from the fact that there was none to criticize it unfavorably on the floor of the convention.

A National Convention in Reality

The twenty-first annual meeting of the National Gas Association of America started off under most auspicious circumstances.

The fact that the meeting was held in a city which is not far from the geographical center of the United States, and also of the oil and gas producing regions of the country, brought an unusual attendance from the distant states of California, Montana and Wyoming, while the Dominion of Canada and all the eastern gas-producing states were largely represented by corporation executives, gas engineers, local company officials, field superintendents and field workmen. All the southwestern gas states, Kansas, Oklahoma, Texas, Arkansas and Louisiana, had large representations. The first day's registration showed over 500 names and the bulk of the crowd did not reach Tulsa until late Monday night or early Tuesday morning, as the regular sessions of the convention did not commence until Tuesday.

The meeting was held on the grounds of the International Petroleum Exposition. The big manufacturers' exhibit of field, line and household materials and equipment, all of which have a direct bearing on the natural gas industry, was installed in the Texas building, the convention sessions were held in the New York building, while the Louisiana building was converted into an immense dinning room, where hot meals that would do credit to the best of hotels were served by the women members of one of Tulsa's church organizations.

The first session of the three-day series of meetings was opened Tuesday morning with a large attendance. Archie W. Leonard, first vice president of Oklahoma Natural Gas Co. and president of the Natural Gas Association of America, was in the chair.

The Rev. C. W. Kerr, pastor of the First Presbyterian Church of Tulsa, and a product of Parker's Landing, Pa., and therefore always a resident of the oil and gas country, gave the invocation. He was followed by City Commissioner George D. Watkins, who represented Mayor H. F. Newblock in extending to the visitors the freedom of the city. Mr. Watkins' clever speech was responded to in the same vein by R. C. Sharp, vice president of the Oklahoma Natural Gas Co. on behalf of the association.

Addresses in Full Elsewhere

The addresses of President A. W. Leonard, E. O. Bennett, John T. Naylon, E. J. Stephany, Robert W. Hendee and Edward F. McKay are all to be found in full elsewhere in this issue of The Oil and Gas Journal.

The program included the following papers and addresses: Address of the president, A. W. Leonard, Tulsa; "Natural Gas—Its Conservation and Significance to the Gas and Oil Operator," E. O. Bennett, Bartlesville, natural gas engineer, United States Bureau of Mines; "Complaints Are Merely Contact Points to Promote Good Will," John T. Naylon, El Reno, Okla., division manager Oklahoma Gas & Electric Co.; "Field Development and Operating Economies," Robert W. Hendee, Okmulgee, Okla., president Kingwood Pipe Line Co.; "Association Service," Edward F. McKay, Oklahoma City, Okla., manager Oklahoma Utilities Association.

Mr. Bennett's paper was followed by a battery of questions on the use of gas and air, under compression, to increase production of old wells. The almost universal interest being taken in this old Marietta or Smith Dunn process, which has been greatly improved by the experiments and studies of modern engineers and practical oil producers, was evident from the interest taken in the Bennett paper.

Good Will of the Public

Mr Naylon's paper on "complaints" led a number of other gas men to speak on the importance of more than meeting the customer half way, and of the importance of obtaining the good will of the greatest possible number of ultimate consumers.

The paper of Mr. Stephany on methods of selling gas in competition with other fuels called for some questions and comment. The principal question involved was the intense and clever propaganda of the companies selling electricity and equipment, particularly electric kitchen ranges. R. W. Gallagher of Cleveland, vice president of the Natural Gas Association, was free to compliment the electric public utilities for their master salesmanship and with the alluring effect of their advertising. He said, however, that where the natural gas company entered into competition with the sellers of electric gas ranges backed by facts and figures that could be substantiated by results the outcome was all in favor of natural gas from the standpoint of economy. His company had found it so in its field. The establishment of laboratories and research departments which would give every gas company an opportunity to possess facts that would answer all unfavorable comparisons between natural gas and other fuels was stressed. In this respect the utilities selling electric light and power were better equipped than the gas industry, it was said.

In Memoriam

The report of the memorials committee was read by William H. Thompson, secretary of the Ohio Gas and Oil Men's Association. The audience stood with bowed heads as name after name of well known and respected men in the industry, who had passed out of this life within the past year, was read by Mr. Thompson, who eulogized the departed in a short but affecting address. The names of the dead members were Elmer A. Smith, Pittsburgh, Pa., Owen Murphy, Washington, Pa., A. A. Crawford, Bradford, Pa., George Yardley, Oil City, Pa.; Col. Fred Paul Crosscup, Charleston, W. Va.; Frank R. Hutchinson, Cleveland, Ohio; Judge S. M. Douglass, Mansfield, Ohio; A. C. Bedford, New York; Judge J. C. Royer, Tiffin, Ohio; J. D. McIlhenny, Philadelphia, Pa.; Lemon G. Neely, St. Marys, Ohio; J. W. Steinbeck, Clarksburg, W. Va.; W. A. Fenwick, Newark, N. J.; John Elmer Loveland, Fremont, Ohio; Thomas J. Patterson, Los Angeles, Calif.; Thomas J. Protheroe, Los Angeles, Calif.; E. Z. Jefferson, Pittsburgh, Pa.; R. J. Williams, Kane, Pa.; J. C. McDowell, Pittsburgh, Pa.; L. R. Dingman, Pittsburgh, Pa.; Robert H. Higgins, Marion, Ohio; William G. Long, Tulsa, Okla.

"Bill" Long Eulogized

At the conclusion of Mr. Thompson's report, J. M. Garard, vice president of the Ohio Fuel Gas Co., Columbus, Ohio, arose and paid a tribute to the life and work of William G. Long of Tulsa, who died recently. Mr. Garard said he had known Bill Long since both were boys. He had known him in many fields and in various circumstances in life, but that wherever Bill Long had gone it was to make new friends who remained with him through life. Mr. Garard spoke in the highest terms of the personality of his old friend and gave him full credit for his efforts to bring the gas convention to Tulsa, which had been one of Mr. Long's ambitions for several years before

MEMBERS OF NATURAL GAS ASSOCIATION OF AMERICA AND NATU GAS

the association picked Tulsa as its meeting place. He voiced his regret that Bill Long could not have been spared long enough to enjoy the fruits of his efforts.

Reports of the board of directors, treasurer and committee on membership were read and referred.

In the course of the morning session, Eddie Quigley, well known through his association with the International Petroleum Exposition, introduced a little diversion when he went to the piano and, with a lively jazz refrain brought out two agile little negroes, a boy and a girl, who gave a fine exhibition of the Charleston.

Wednesday's Session

Wednesday's session was a general forum in which many subjects relating to the gas industry were discussed, while Thursday will be devoted to papers and talks on laboratory and research work.

Entertainment Features

Plenty of entertainment is being supplied by the local committee of arrangements. On Monday evening, the association provided a sporting event in the form of a world championship wrestling match in which the visiting gas men were given an opportunity of seeing the famous "Strangler" Lewis take a couple of falls out of an ambitious youth named Joe Odell of Colby, Kans., and Toots Mondt flop a Greek athlete named Demetral, after a lively rough and tumble scrimmage in which no kind of punches or kicks were barred. On Tuesday evening, the rose carnival was given in the ball room of the Mayo Hotel, at which the gas men and their ladies were honored guests. On Wednesday morning the rose carnival parade, a beautiful pageant was staged in the streets. The annual banquet will be held Wednesday night, James A. Veasey, of Tulsa, presiding. The Oklahoma Natural Gas Co. employes' band is constantly on hand supplying good music either at the Hotel Mayo or the Exposition grounds, the convention headquarters.

Many of the leading manufacturers of oil and gas supplies and equipment are exhibiting in the big Texas Building, and it was noticeable that the exhibit was as largely attended as were the sessions of the convention in the New York Building.

Research Reports

The technical and research committee and subcommittees of the Natural Gas Association of America held a meeting Monday in the Mayo Hotel, Tulsa, as a preliminary to the convention of the Natural Gas Association. The meeting lasted from 10 o'clock in the morning until well in the afternoon. H. C. Cooper, chairman of the committee, presided.

Reports were received from the following committees: Gas Measurement, F. M. Towl, chairman; Electrolysis, J. D. Creveling, chairman; Gas Transportation, H. H. Hancock, chairman; Standard Meter Connection, T. R. Weymouth, chairman; Gas Utilization, E. D. Leland, chairman; Gas Distribution, J. H. Maxon, chairman; Testing Gas Appliances, T. H. Kerr, chairman.

The gas transportation committee reported a year's progress, with much work yet to be done. The United States Bureau of Mines had given valuable help to the association in trying to solve the big question of gas transportation on main lines and under heavy pressure. Thus far the committee had met with such a wide variety of conditions in gases, in size of lines, in uniformity of data, in difference of expert opinion as to the influence of viscosity, temperature, etc., that it is not yet in a position to make a definite report which would include recommendations the gas industry could put into practical use under the different working conditions to be found in the many gas producing and distributing regions of the United States. It had made progress, however, and desired the support of the association in further studies and experiments and welcomed the co-operation of the American Gas Association and the Association of Natural Gasoline Manufacturers in completing its research work.

The committee on distribution after examining the program of the same committee of the American Gas Association reported that inasmuch as the latter organization was conducting experiments that started with the source of the gas and ended only at the consumer's burner, the natural gas committee on distribution to avoid duplication had decided to confine its work to study and experiments starting at the city gates and ending at the inlet to the consumer's meter. This committee is working to determine sizes of city mains and the material from which they are made; methods of construction of lines, styles of joints, pressure through lines, etc. It seeks to find a way to install new lines in a manner that will best serve the natural gas company when the time comes to add artificial gas to its natural gas supply, or to substitute it altogether.

George P. Bunn of Bartlesville, Okla., read a paper dealing with standards for testing gas for gasoline content, which paper had been presented at the annual convention of the Association of Natural Gasoline Manufacturers in Tulsa recently. It was followed by a general discussion.

All the reports submitted were subjected to a free discussion and at Thursday's general session of the convention Chairman Cooper will make a general report on the work of the technical and research committee, together with recommendations on its program for the coming year.

Supply Men's Directors

At the annual meeting of the Natural Gas Supply Men, Inc., held Monday in connection with the annual convention of the Natural Gas Association of America in Tulsa, directors were elected to serve two unexpired terms and to succeed directors whose terms expired this year.

President Fred A. Miller of the S. R. Dresser Manufacturing Co., of Bradford, Pa., presided and Secretary Guy E. Batchelor of Pittsburgh, Pa., took care of the details of the meeting.

The new directors elected were W. F. Rockwell, Equitable Meter Manufacturing Co., and Guy E. Batchelor, to fill terms of directors who resigned and Roy E. Kohn, Continental Supply Co.; William Patterson, Frick & Lindsay Co., R. A. McKinney, Manhattan Rubber Manufacturing Co.; Hugh Trimble, National Supply Co., and H. V. Wadsworth, Westcott Valve Co.

The reports of the officers of the association showed the organization to be in a healthy financial condition and that its membership was growing.

CRUDE PRICES INCREASED IN MANY FIELDS THROUGHOUT THE COUNTRY

A general 25-cent increase in the price paid for crude in the Mid-Continent fields from which the lines of the Prairie Pipe Line Co. gather oil, was made Saturday, May 15, by the Prairie Oil & Gas Co., the major crude oil purchasing agency in the Mid-Continent territory. The increased price was met by the other purchasing companies. The Magnolia Petroleum Co. meeting the schedule for oil from 28 degrees upward but posting a price of $1.30 for oil below 28 gravity. The new Prairie schedule is as follows:

Degrees Gravity—	Price
28 to 28.9	$1.65
29 to 29.9	1.73
30 to 30.9	1.81
31 to 31.9	1.89
32 to 32.9	1.97
33 to 33.9	2.05
34 to 34.9	2.13
35 to 35.9	2.21
36 to 36.9	2.29
37 to 37.9	2.37
38 to 38.9	2.45
39 to 39.9	2.53
40 to 40.9	2.61
41 to 41.9	2.69
42 to 42.9	2.77
43 to 43.9	2.85
44 to 44.9	2.93
45 to 45.9	3.01
46 to 46.9	3.09
47 to 47.9	3.17
48 to 48.9	3.25
49 to 49.9	3.33
50 to 50.9	3.41
51 to 51.9	3.49
52 degrees and over	3.57

In addition to previously mentioned Mid-Continent changes, Champlin Refining Co., on Saturday posted an advance of 25 cents, keeping its new prices 10 cents above the Prairie schedule. The Texhoma Oil & Refining Co. on Sunday followed with an advance for crude in the Wichita Falls, Texas, district, making its new prices 5 cents above the Prairie postings.

Panhandle Gets Increase

On the day the Prairie posted its new price, the Kay County Gas Co. posted an advance in the price it will pay for crude produced in the Panhandle Field in Texas. The Kay County Gas Co. is a subsidiary of the Marland Oil Co. Its new postings follows:

Degrees Gravity	Posted Price	Increase (Cents)
28 to 28.9	$1.35	.15
29 to 29.9	1.40	.20
30 to 30.9	1.45	.25
31 to 31.9	1.50	.15
32 to 32.9	1.55	.20
33 to 33.9	1.60	.25
34 to 34.9	1.65	.10
35 to 35.9	1.70	.15
36 to 36.9	1.75	.20
37 to 37.9	1.80	.10
38 to 38.9	1.85	.15
39 and over	1.90*	

*This price is 20 cents above the old price for oil of 39 to 39.9 gravity and 15 cents above the old price paid for oil of 40 degrees and above.

Salt Creek Oil Advanced

The Midwest Refining Co., which is the principal buyer of crude oil in the Salt Creek Field in Wyoming, posted a 25-cent increase on its price in that field, which will give Salt Creek producers the following price schedule:

Salt Creek Crude Prices

Degrees in Gravity—	
29 to 29.9	$1.73
30 to 30.9	1.81
31 to 31.9	1.89
32 to 32.9	1.97
33 to 33.9	2.05
34 to 34.9	2.13
35 to 35.9	2.21
36 to 36.9	2.29
37 and above	2.37

3 Eastern Grades Increased

The Joseph Seep Agency on Monday, May 17, advanced three grades of crude 20 cents each. These, and the new posted prices follow:

Cabell, W. Va.	$2.40
Somerset, Ky., medium	2.50
Somerset, Ky., light	2.65

Ohio Oil Co.'s Postings

The Ohio Oil Co. posted a 25-cent advance on crude produced in Lima, Illinois, Indiana, Princeton, Plymouth and Waterloo, and also announced a 25-cent increase on crude it bought in the Artesia Field in southeastern New Mexico.

Effective on Monday crude buyers in Big Muddy, Grass Creek, (light), Mule Creek, Osage, Elk Basin, Rex Lake, Lost Soldier, (Wyo.), Greybull, Cat Creek, (Mont.); Florence, Colo.; Artesia, N. M. and Hogback, N. M., posted a 25-cent advance.

(Continued on Page 195)

NATU GAS SUPPLY MEN, INC., IN ANNUAL CONVENTION, TULSA, MAY 18

—Photo by Ward, Tulsa.

Draft Model Fire Protection Ordinance

Annual Meeting N.F.P.A. Adopts Suggested Measure for Towns as Modified by A. P. I. Fire Prevention Committee

By L. M. Fanning
New York Bureau, The Oil and Gas Journal, 30 Church St., New York

At the annual meeting of the National Fire Protection Association held at Atlantic City, May 10 to 13, a suggested model ordinance regulating the use, handling, storage and sale of flammable liquids, presented by the committee on laws and ordinances, was adopted. This matter has been before the association for a number of years and the original radical suggestions covering distance of tanks from property lines and the spacing of tanks have been fought by the general committee on fire prevention and protection of life and property of the American Petroleum Institute. The suggested ordinance as finally passed has been greatly modified and, while it represents some concessions on the part of the oil industry, is considered reasonable as against entirely unreasonable proposals formerly made.

The National Fire Protection Association also adopted the progress report of the committee on flammable liquids on revisions of the regulations for oil burning equipments and on proposed recommended good practice for the construction of automobile oil tank trucks.

Having approved the suggested model ordinance regulating handling and storage of oil, the association will proceed with the printing. It will be available as a model or guide for the use of the various cities and towns and will probably be more or less generally observed, depending on local conditions, by the oil industry. It particularly involves bulk and filling stations. The suggested distance of tanks from property lines offered in the ordinance are minimum distances. Exact distances are left for engineering computation based on local conditions. The stipulated minimum distances are somewhat greater than present general practice.

The interest of the fire prevention committee of the American Petroleum Institute in the matter has been to keep the stipulated distances within reason. The original suggestions were regarded as entirely unreasonable and would have had serious consequences in the industry if approved and generally adopted. Modification of the radical suggestions is a direct result of the tank fire investigation made by a sub-committee of the institute's fire prevention committee, comprising Harry L. Shoemaker, Frank A. Epps and Ralph J. Reed, completed last year. The investigation covered a 10-year period.

Results of Investigations

This report showed 304 fires occurring in 10 years and involving 416 tanks, an analysis showing, according to the committee, that fewer fires occur in marketing stations than in any other class of property, marketing stations showing only 19 fires.

The fire prevention committee of the institute, of which Dr. R. P. Anderson is temporary chairman, plans to continue and enlarge the work of collecting data as to oil industry fires.

The text of the suggested ordinance passed by the National Fire Protection Association follows, in part:

CHAPTER III. Storage Tanks — Capacity, Location and Restriction.

45. Storage Must Be Outside Buildings

SECTION 45. Except as otherwise permitted in this ordinance, the storage of flammable liquids shall be outside buildings, in underground tanks or above-ground tanks; except that the storage in tanks above ground or outside buildings is prohibited within the following limits: (Note. These limits to be specified; they should include the mercantile and other congested districts and land near streams or other water ways which would carry burning liquids into congested districts.) Provided that for existing tanks within such limits, which are properly safeguarded, and do not involve a hazard to other property, a permit shall be granted.

46. Underground Storage Limited

SECTION 46. Tanks buried underground shall have the top of the tank not less than 2 feet below the surface of the ground, and below the level of any piping to which the tanks may be connected, except that, in lieu of the 2-foot cover, tanks may be buried under 12 inches of earth and a cover of reinforced concrete at least 6 inches in thickness provided, which shall extend at least 1 foot beyond the outline of tank in all directions; concrete cover to be placed on a firm, well tamped earth foundation. Where necessary to prevent floating, tanks shall be securely anchored or weighted.

Where a tank cannot be entirely buried, it shall be covered over with earth to a depth of at least 2 feet with a slope on all sides not steeper than 1½ feet horizontal to 1 foot vertical.

The limit of storage permitted shall depend upon the location of tank with respect to the building to be supplied and adjacent buildings, as follows:

Maximum Capacity of Tanks for Underground Storage

Location	Class I, II and III. Under 100° F. flashpoint	Class III Above 100° F. flashpoint.
If top of tank is lower than all floors, basements, cellars, or pits of all buildings.		
a. Within a radius of 50 feet	Unlimited	Unlimited
b. Within a radius of 40 feet	50,000 gallons	500,000 gallons
c. Within a radius of 30 feet	20,000 gallons	200,000 gallons
d. Within a radius of 25 feet	15,000 gallons	150,000 gallons
e. Within a radius of 20 feet	5,000 gallons	100,000 gallons
f. Within a radius of 10 feet	2,000 gallons	75,000 gallons
g. If within 10 feet of any building, and the top of tank is above the lowest floor, basement, cellar or pit of the building.	550 gallons	50,000 gallons

h. Tank located beneath a building shall be below all portions of that building and is limited in capacity only in respect to other buildings as given above under a to g.

i. A tolerance of 10 per cent in capacity shall be allowed in tanks of 150,000 gallons or less capacity.

47. Capacity and location of above ground tanks.

SECTION 47. In case of tanks for the storage of Class I, II and III liquids at marketing stations, wholesale storages, port terminals and other properties where flammable liquids are stored in quantities the distance from the line of adjoining property which may be built upon shall in no case be less than set forth in Table 1 nor less than double these distances in the case of tanks for the storage of crude petroleum. In particular installations these distances may be increased at the discretion of the authority having jurisdiction after consideration of the special features such as topographical conditions; nature of occupancy and proximity to buildings on adjoining property and height and character of construction of such buildings; capacity and construction of proposed tanks and character of liquids to be stored; degree of private fire protection to be provided, and facilities of the fire department to cope with oil fires. Consideration of these features shall also determine the distances for tanks of capacities of over 50,000 gallons.

Table 1—Minimum Distance of Outside Above-Ground Tanks for Class I, II and III Liquids Other Than Crude Petroleum to Line of Adjoining Property Which May Be Built Upon

Capacity of Tank, Gallons	Minimum Distance to Line of Adjoining Property which may be built upon
0 to 12,000	10 feet
12,001 to 24,000	15 feet
24,001 to 30,000	20 feet
30,001 to 50,000	25 feet

At marketing stations and elsewhere truck loading racks shall be separated from tanks, warehouses and other plant buildings, by distances at least equivalent to those specified in Table 1.

The minimum distance between above-ground storage tanks shall be in accordance with the following table:

Table 2—Minimum Distances Between Above-Ground Storage Tanks
(Applies to all classes of liquid)

Capacity of Tank (or of the larger of the two tanks between which distance is to be measured) Gallons	Minimum Distance Between Tanks
300 or less	3 feet
500 or less	3 feet
1,000 or less	3 feet
8,000 or less	3 feet
12,000 or less	3 feet
18,000 or less	3 feet
24,000 or less	5 feet
30,000 or less	10 feet
48,000 or less	10 feet
75,000 or less	13 feet
100,000 or less	15 feet
150,000 or less	Distance equal to the diameter (or the greatest horizontal dimension if the tank is not cylindrical) of the tank, or of the larger of the two tanks between which distance is to be measured.
200,000 or less	
500,000 or less	
1,000,000 or less	
2,500,000 or less	

48. Openings in above-ground tanks.

SECTION 48. Each above-ground tank, inside or outside buildings, over 100 gallons in capacity shall have vent openings, excepting safety valves, provided with noncorrodible wire screens (preferably 40x40 mesh but not less than 30x30 mesh or its equivalent) so attached as to completely cover the openings. Unless vent openings are adequate to relieve any excessive pressure, a safety valve shall be provided, or manhole covers shall be kept closed by weight only, and not firmly attached. The screens on openings may be made removable, but shall be kept normally firmly attached. The covers for manholes, handholes and gauge holes shall be made tight fitting.

49. Above ground tanks labeled.

SECTION 49. Above-ground tanks for Class I and II liquids shall have painted conspicuously upon their sides in letters at least 2 inches high the wording, "Flammable—Keep Fire Away."

50. Material and construction of underground tanks.

SECTION 50. Tanks shall be constructed of galvanized steel, of open hearth steel or of wrought iron of a thickness not less than that specified in Tables 2 and 3. For liquids heavier than 35 degrees Baume, tanks may be constructed of concrete in accordance with the reg-

(Continued on Page 205)

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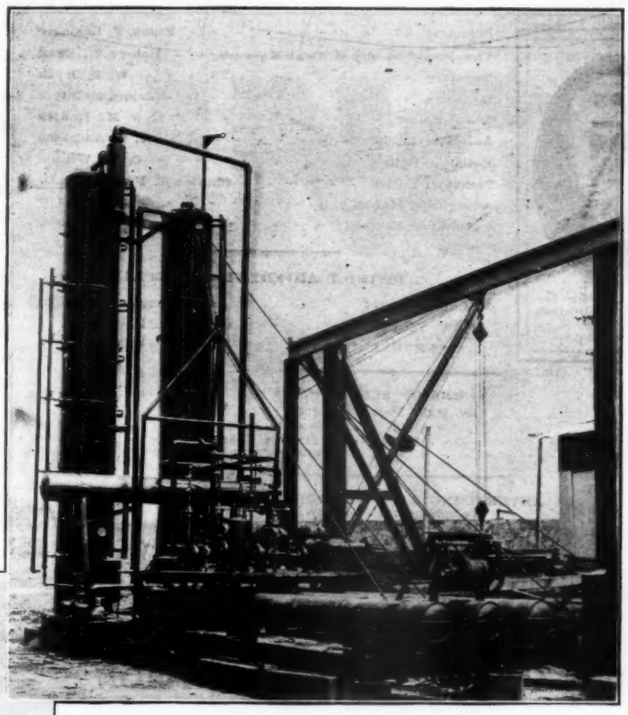

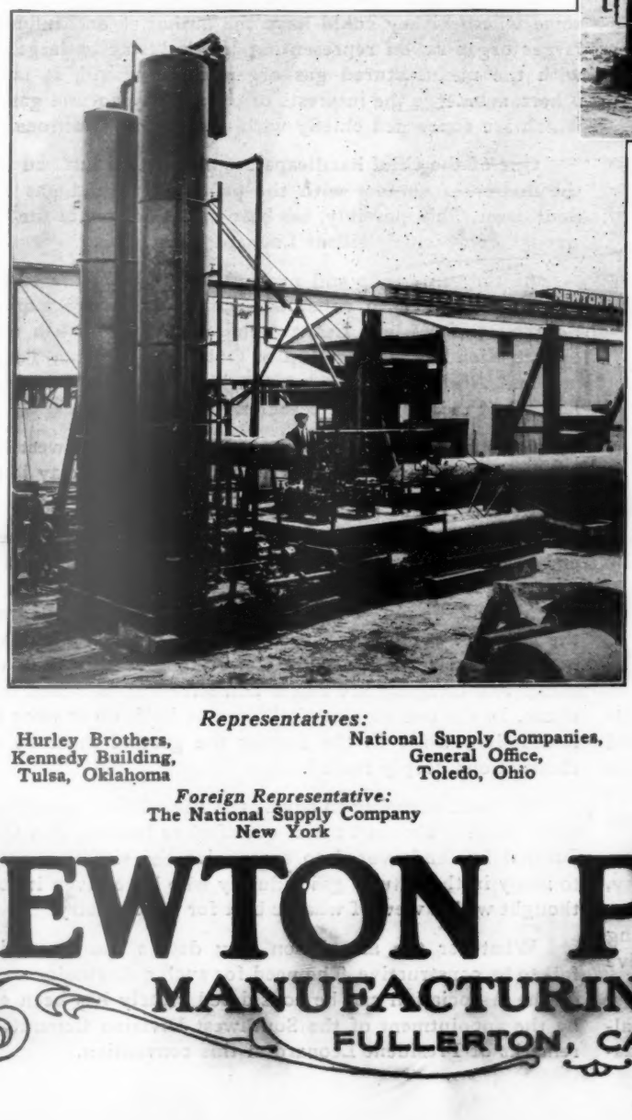

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THE NATURAL GAS ASSOCIATION

The "Coming of Age" Convention of the Natural Gas Association of America, held in Tulsa this week, has been the most important of its twenty-one years.

The Association found itself, owing to changing conditions within the gas industry, confronted with the question of considering a change in policy, perhaps of organization, to fit the altered circumstances.

This necessity was very clearly stated by President A. W. Leonard in his annual address which frankly recognized that "something is wrong—our organization must be made more valuable."

At the Atlantic City convention a year ago and at the Cleveland session the previous year there was informal discussion of the possibility—as natural gas companies in the East became more interested through dwindling supply of the natural product in manufactured gas—of the eventual merging of their association with the American Gas Association.

So well was this understood that it was generally agreed it would be only a question of time until such a combination would be not alone logical but essential.

As the eastern companies were obliged more and more to maintain their supply by resort to manufactured gas their interest and their problems would become more akin to those of the members of the American Gas Association and by the same conditions more remote from those of the natural gas companies in the Southwest, which would continue to deal with purely natural gas problems.

A committee, composed of N. C. McGowen, H. L. Montgomery, H. C. Morris, F. L. Chase and President A. W. Leonard, was appointed at Atlantic City to consider the advisability of organizing a Southwestern Division of the Association and in the past twelve months the proposition has been canvassed among the members.

President Leonard, in his annual address, suggested three alternatives to the judgment of the convention. One was the organization of State associations on the theory that they would be best qualified to deal with local problems. The second was affiliation, presumably with the American Gas Association. The third was energetic steps looking toward a larger and more useful natural gas association.

In the past four years the Mid-Continent produced more gas than the entire area east of the Mississippi. Oklahoma has taken first place from West Virginia which, in 1924, the latest year for which official production figures are available, was third in natural gas production, California now being second.

Yet up to the end of 1905 the fields east of the Mississippi had produced about 98 per cent of the value of all the natural gas produced in the United States.

The eastern fields are, of course, far from exhausted, producing 40 per cent of the volume in 1924, but the big volume now and in the future is and will be in the Southwest.

The operating problems, both in the field and in the marketing division, are radically different and will become more so as the eastern companies turn to the mixing of manufactured gas with the natural product. The higher value makes a material difference, the east having a populous area and a declining supply while the Southwest's problem is to enlarge its market.

In the matter of regulation and legislation the Southwest's position is entirely different also. Years of operation have more or less stabilized conditions in the older States but in the newer there is a readier resort to experimental legislative and administrative methods which bear heavily upon utility corporations.

State associations have been suggested but it is doubted by some whether they could have the authority and influence of the larger organization representing the industry at large. Affiliation with the manufactured gas organization would, it is feared by others, submerge the interests of the strictly natural gas companies which are concerned chiefly with natural gas questions.

One of the chief handicaps the association has had has been in the matter of contact with the principal natural gas area in the Southwest. This, possibly, has been at the bottom of the "something wrong" of which President Leonard complained.

At the same time and perhaps for the same reason the Association has failed to enlist adequately the active support of the Southwest. President Leonard indicated that with a more useful organization the membership in Oklahoma, Kansas, Texas, Louisiana and Arkansas might be greatly increased, thus attaining the larger and more effective association desired.

Questions are continually arising in the Southwest that should be met by united counsel and action and where delay is dangerous.

Reference was made to the necessity of improving public relationship. The arguments that would be applicable where natural and artificial gas were mixed would be inapplicable in a strictly natural gas territory. There is a difference also in the respective attitudes of the public and utility corporations in the two areas of the country. Prejudices surviving from old misunderstanding and possibly unwise policies, are slower to give way than where consumer and company are newer and have not hardened into antagonisms. In the one case goodwill can be built up at once on its own foundation, while in the former the ground must be cleared of obstructions deeply rooted.

Without assuming to advise the Association upon its own business which it should be best qualified to handle, The Oil and Gas Journal has endeavored to summarize the situation as it appears to many in the natural gas industry who have given it considerable thought with a view of what is best for the industry.

Whatever the association may decide the discussion cannot fail to be constructive. The need for such a discussion so the future of the Association can be considered clearly has been emphasized by the appointment of the Southwest Division Committee and the remarks of President Leonard at this convention.

DRESSER COUPLINGS

DOMINATE

S.R. DRESSER MFG. CO. BRADFORD, PA. U.S.A.

Technical Questions Answered

By DR. C. K. FRANCIS, TECHNICAL EDITOR

QUALITY OF CRUDE OIL

What relation has the present method of grading crude on the gravity basis to the real quality as shown by analysis? Is it not possible for a crude to have a higher gravity than another and yet be worth less on a refining basis? How would you value the two crudes as per enclosed tests?—A. G. F.

The gravity of a crude oil is usually a fair indication of its value, although many examples might be mentioned to show that there are often wide differences in the relative values of crudes having approximately the same gravity. This is more often true when the gravities are below 35 than above. The two analyses submitted show the following:

	No. 1 Oil	No. 2 Oil
Gravity, A.P.I.	36.3	36.8
Gasoline	15%	25%
Gravity	58.6	58
I.B.P.	130F.	106F.
Maximum	400	410
Naphtha	8%	5%
Gravity	49.2	48
I.B.P.	150	180
Maximum	476	490
Kerosene	20%	17%
Gravity	41.6	41.4
Flash	162	140
Gas oil	10%	8%
Flash	235	
I.B.P.	480	
Wax distillate	25%	22%
Gravity	30	29
Flash	330	380
Fuel	15%	21%
Gravity	22	17

The exceptional oils do not warrant special prices or attention except when large quantities, such as an individual pool, are involved.

The quantity of the different fractions, products, of course, influence the value. Sometimes crudes are found practically free from gasoline, but containing large quantities of kerosene which bring up the gravity high enough to make the oil have the appearance of a high gasoline content oil. On the present market kerosene is bringing about the same as gasoline, so this product does not now affect the value as it may have in the past.

Calculating on the basis of 100 gallons and using the values shown, the money value may be determined:

	No. 1		No. 2	
Light products:				
43 gals. at 10c,	$4.30	47 gals. at 10c,		$4.70
Gas oil:				
10 gals. at 4c,	.40	8 gals. at 4c,		.32
Wax distillate:				
25 gals. at 6c,	$1.50	22 gals. at 6c,		$1.32
Fuel:				
15 gals. at 3c,	.45	21 gals. at 3c,		.63
Total 100 gallons	$6.65			$6.95
Cost Mid-Cont.	4.85			5.04
Gross profit	$1.80			$1.93

AMARILLO CRUDE

Can you give me an analysis showing the contents of crude from Amarillo, Tex.?—H. S. S.

I have seen several analyses of this crude, the quality of which appears to vary more than usual. One sample tested as follows:

Gravity, A. P. I.	35
Pour (C.T.)	55°F.
Sulphur	0.7%
Gasoline, 58 grav.	25%
Naphtha, 44 grav.	2%
Kerosene, 41 grav.	12%
Gas oil, 34 grav.	25%
Wax distillate, 31 grav.	25%
Fuel, 14 grav.	9%

The other analysis ranged as follows:

Gravity	34 to 39
Sulphur	0.6 to 0.9
Pour (C.T.)	35° to 80°F.
Gasoline	25 to 36%
Kerosene	6 to 12%
Gas oil	10 to 25%
Wax distillate	20 to 25%
Bottoms (fuel)	9 to 40%

DISTILLATION TEST—Correction for Room Temperature

When making a distillation test it seems to me that some allowance should be made for room temperature. The temperature of the condenser is so much lower than average room temperature that a wide difference must influence the initial boiling point. Is it possible to calculate a correction for this?—G. M. A.

This condition has been recognized by the American Society for Testing Materials and the following rule has been proposed for adoption.

The room temperature at some point adjacent to the distillation flask shall be observed and recorded. If this room temperature is below 65 degrees Fahrenheit (18 degrees Centigrade) or above 75 degrees Fahrenheit (24 degrees Centigrade) the observed initial boiling point, if it is below 150 degrees Fahrenheit (65 degrees Centigrade), may be considered incorrect by an amount not less than one-third of the difference between the observed room temperature and 70 degrees Fahrenheit (21 degrees Centigrade). In case there is a dispute the observed initial boiling point figures obtained by all parties shall be revised according to the following formula.

Revised I.B.P.=Observed I.B.P.—(Room temp.—70°F.)

(3)

In case all of the revised figures fall within the specification limit the product in question shall be considered as passing; otherwise arrangements shall if possible be made to conduct a distillation test with the room temperature maintained between the limits of 65 degrees Fahrenheit and 75 degrees Fahrenheit inclusive.

PETROLEUM COKE

Can you give me a complete analysis of petroleum coke? Is there any difference between coke from crude oil and coke obtained in pressure stills?—P. B. M.

The only analyses available were obtained by reducing crude and pressure still residues. There is probably not much difference in a general way, slight differences in composition may be noted in the two analyses, and these may be explained as being due to the character of the changing stock.

Analysis Petroleum Coke		
From—	Crude Oil	Pressure Still Residue
Moisture	0.80	0.40
Volatile matter	9.46	6.30
Fixed carbon	88.94	92.58
Ash	0.80	0.72
Sulphur	1.26	0.60
B.t.w.	15,000	15,019

Ash Analysis		
Ferric oxide		0.26
Silica		0.16
Soluble salts		0.28
Undetermined		0.02
		0.72

AGE OF EARTH FROM GAS ANALYSIS

A newspaper article states that a new method for estimating the age of the earth has been discovered by analysis of natural gas. Have you any information about this?—J. E. A.

No doubt you have reference to a recent announcement of the United States Geological Survey. They have interpreted a number of mineral and gas analyses as the basis of radioactive decay or transmutation of certain elements. There is evidence that helium and lead are the final products of the radioactive decay of the elements uranium and thorium, and the age of the rock is computed from the rate of such decay and the quantities of these substances the rock contains. This method indicates that the age of the earth may be estimated in terms of hundreds of millions of years.

Time relations have always been of major interest in geology. Both practical and theoretical geologists need to know in the study of rocks and minerals which were formed earlier and which were later. The mere observation of relative position was for a long time the only guide; then came correlation by means of fossils of extinct animals; and finally attempts have been made to estimate the length of time required to deposit the sedimentary strata or to cut gorges, or the time required for sediments to shrink, for the earth to cool, and the like; and some of these estimates have even led to speculations concerning the age of the earth itself.

This statement suggests that minerals are the source of the data and not natural gas, which often contains appreciable quantities of helium.

MOLECULAR WEIGHT OF AIR

The molecular weight of air is mentioned in an article as 29. While I have not had a course in this subject I understand that molecular weights are the sum of the atomic weights in a compound, so would like to know how this is found for air—D. T. H.

This is an approximate figure based on the composition of air. Your definition is correct so far as it goes, but a molecule of hydrogen, oxygen or any elementary gas consists of two atoms. The molecular weight of such substances as methane and ethane is indicated in the formula as CH_4 and C_2H_6, or 18 and 30 from C=12 and C_2=24

H= 4 H_6= 6

16 30

Air contains by volume:

Oxygen	20.92 per cent
Nitrogen	78.14 per cent
Argon, etc.	0.90 per cent
Carbon dioxide	0.04 per cent

By Avogadro's hypothesis equal, volumes of all substances, when in the state of gas, and under standard conditions of temperature and pressure contain the same number of molecules. It has been found that 22.4 liters or 359 cubic feet is a constant representing the molecular weight in grams or pounds of any gas. This volume is known as the molecular volume or mole.

The molecular weight of air, or any gas mixture, may be calculated from the analysis:

Substance Present	Parts of 1 Mol.	Mol. weight in 1 mol.	Pounds
Oxygen	.2092	×32.00	= 6.69
Nitrogen	.7814	×28.02	=21.90
Argon, etc.	.0090	×40.00	= 0.02
Carbon dioxide	.0004	×44.00	= 0.36

Total weight of 1 mole, lbs.=28.97 or approximately 29.00 pounds.

The common application of this figure, the pound molecular weight or mole, is for changing the weight to volume or the opposite. That is 29 pounds of air measures 359 cubic feet, or 2 pounds of hydrogen measures 359 cubic feet.

SOURCE OF WATER IN OIL WELLS

We have a well making some water and believe we have a split casing. Is it possible to determine this without pulling the casing?—G. L. A.

There are several methods for doing this. A solution of strong colored dye poured between the strings will sometimes locate this trouble. A chemical analysis of the water will also give the information, provided it is possible to secure samples of the different waters met with. Electrical resistance measurements have been used with success and have some advantage over the analytical method which requires more time.

If the well has been completed it will be necessary to remove the tubing, except when the water is entering from the sand. All of the fluid should be removed, or as much as possible, then the dye solution poured on the outside of the tubing or in the outer casing, etc. Run the bailer until the color is picked up, and note the depth.

The procedure is about the same when using the electrical resistance method. The fluid is replaced with soft water, or water containing but little mineral matter. Then some of this water should be removed to reduce the hydrostatic head, and to permit the contaminating water to enter. The resistance is then determined at different depths. A positive decrease in the resistance will be shown at the point where the salt water is entering. If the entering water is fresh then the dye method or the chemical method may be used.

PURIFYING NATURAL GASOLINE

Does gasoline derived from natural gas go through the same kind of purifying process as that used for refining gasoline? Will you kindly outline the common method?—H. W. R.

Gasoline from natural gas, usually called natural gasoline, varies in composition as does gasoline from crude oil, according to method of manufacture and the source. A gas from one district may not contain the same impurities as the gas in another field or country. The method for the removal of impurities will therefore vary, and must depend upon the character of the substances present.

It is seldom necessary to follow the same practice as that employed in refineries where the gasoline may be a complex liquid derived from crude oil, pressure stills and still gases. The refinery gasoline, or at least part of it, may have to be treated with sulphuric acid, sodium hydroxide, litharge and sulphur. The addition of acid is commonly made to a distillate containing gasoline, such as the distillate from a pressure still, and the operation called treating. The treated liquid is distilled and the product further purified or sweetened by the sodium hydroxide, litharge and sulphur treatment. The litharge dissolved in the sodium hydroxide is known as doctor solution or simply "doctor". After a final washing with water the product is ready for blending or shipment.

If the crude is free from volatile sulphur and objectionable organic bodies, it is frequently not necessary to do more than wash the lighter or high gravity gasoline, obtained direct from the crude, with an alkaline solution or at most give it a light wash with the "doctor". In a similar way, natural gasoline is in most cases simply washed or sweetened and the extent of this operation depends upon local conditions. The gas may be perfectly sweet and the extraction process cause the introduction of no impurities, therefore, it follows there would be no reason, under such conditions, to treat or sweeten the natural gasoline.

RECLAMATION OF LUBRICATING OIL

Is it possible to recover used oil; that is restore it to its original condition? I am told that the reduction in viscosity of an automobile oil is caused mostly by kerosene and all that is required to restore the lubricating properties is to remove the kerosene. How can this be done?—F. W. P.

The unused oil from the crank case can be reclaimed to a certain extent, but hardly to a condition identical with that of the original oil. No doubt the kerosene which may be produced from the heavy ends present in the fuel does reduce the viscosity of any lubricating oil that has not been partially decomposed. However, the action of the heat tends to crack the oil and thus destroy or reduce the viscosity. Simply removing kerosene could not do the trick. The recovered oil is a mixture of good oil (unused oil) and oil which has deteriorated to some extent. While such oil cannot be put back into a condition that will make it like the oil which went into the car, certain processes are being used which produce a lubricating oil of value.

One process uses a combination of hot water, steam and centrifugal force. Another makes use of hot water, settling and filtering. A third method dilutes the used

(Continued on Page 195)

17 advantages of Fernholtz Oil-Coke Briquettes

(1) High B.T.U. value, ranging from 15,000 to 15,500.

(2) Small ash content, 1.5%.

(3) No clinkers.

(4) Uniform size.

(5) Compact and hard, with no loss in fines.

(6) Do not absorb moisture.

(7) Will not disintegrate in open storage.

(8) Low cost of manufacture, *being made without a binder.*

(9) No smoke after igniting.

(10) No stoking required, remaining firm while burning.

(11) Not subject to spontaneous combustion while in storage.

(12) Ideal domestic and industrial fuel.

(13) Very practical and economical fuel for steam-rollers and portable steam power plants, due to high B.T.U. value, uniform size, absence of clinkers, and no smoke and ash content.

The Fernholtz Process can be adapted to every oil refinery using a modern cracking process, turning into substantial profit what is now an almost entirely waste product. We shall be pleased to furnish full data to refining engineers.

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(14) Unlimited possibilities for smelting purposes due to high B.T.U. value, low ash and low sulphur content.

(15) By dipping briquettes in distillate, which is immediately absorbed, they can be used to start a fire without using wood.

(16) By passing briquettes through a hot paraffin bath they can be handled without soiling the hands.

(17) For above reasons should bring a higher price than any other fuel on the market, with substantial profits to the refiner as a by-product.

Fernholtz Briquetting Process

Spindletop and Panhandle Output Up

Deep Sand Off Coastal Dome Increases Production to 14,000 Bbls. Daily, While Panhandle Making 25,000 Bbls.

The old Spindletop Pool in the Gulf Coast area of Texas now has a production of 14,000 bbls. daily, the greatest in 15 years, as a result of recent developments in that section. It has been definitely ascertained a deep producing sand lies off Spindletop Dome, the Yount Lee Oil Co. having a well making 6,500 bbls. of 23 gravity crude. Increased drilling activity is manifest throughout all the fields with a resultant increase in production. The Panhandle area of Texas is now producing about 25,000 bbls. daily while the completion of a big gas well in Texas County, in the Oklahoma Panhandle, forecasts considerable new development in that area. Congestion in storage facilities in the Sunburst Field in Montana resulted in a big drop in runs there and proration again looms as a possibility. Some large wells have been shut in on account of inability to handle the crude.

Oklahoma

Interest in the Panhandle section of Oklahoma, particularly in Texas County, was intensified during the week by the completion of a 10,000,000-foot gas well by the Wilcox Oil & Gas Co. Many of the large companies hold acreage in the territory and it is expected to be the scene of considerable development within the near future. The Fuhrman Pool in Hughes County took a new lease on life with the completion by the Independent Oil & Gas Co. and Transcontinental Oil Co. of their No. 9 Harjo which made 773 bbls. the first 23 hours. Production from the Hoover sand in the Garber Field resulted in a good increase in output from that area. There is increasing activity noticeable in all sections of the State.

Kansas

The Roxana Petroleum Corp. may have opened a new pool 4 miles west of Oxford in Sumner County with a well estimated good for 200 bbls. from what is thought to be the Wilcox sand. In the Kingman territory, the Ozark Drilling Co.'s No. 1 Richardson had a rainbow of oil in what is thought to be the Kingman horizon at 4,144 feet.

Artesia, N. Mex.

A new pool seems to have been opened 2 miles north of the Artesia Field by the Navajo Oil Co., its No. 1 swabbing 70 bbls. a day. The company announces 10 more tests will be drilled on acreage there. The eastern edge of the Artesia Pool seems to have been defined. Fishing jobs are delaying completion of the Maljamar Oil & Gas Corp.'s wildcat in Lea County. The large companies are protecting themselves in that vicinity by blocking acreage.

East Central Texas

A 10,000,000-foot gas well in Limestone County was the only completion during the week in east central Texas. It is reported drilling is to be resumed shortly in the Kosse section.

Gulf Coast

The Yount-Lee Oil Co. has definitely established the fact that a deep sand lies off Spindletop Dome. Its No. 5 McFadden which came in at 5,500 bbls. is now making 4,000 bbls. Its No. 4 Gladys is making 6,500 bbls. of 23 gravity oil. Flush production is now 14,000 bbls. daily, the largest in 15 years.

Ryeade Petroleum Corp.'s No. 7 Nash in the new Nash Dome, came in flowing 2,300 bbls. 17 gravity. It showed salt water and is now making 1,500 bbls. through ½-inch choker, 2 per cent water.

North Texas and Panhandle

Panhandle production is now probably close to 25,000 bbls. daily, the daily average having been close to 24,000 bbls. last week. Canyon Oil & Gas Co.'s No. 3 J. A. Whittenburg flowed 325 bbls. naturally the first hour after being deepened 3 feet and settled to 250 bbls. an hour. No. 1 is doing 20 bbls. an hour. White Eagle Co.'s No. 1 Johnson is estimated 60 bbls. an hour and its No. 1 Smith Capers made 125 bbls. an hour when it bridged and is being cleaned out.

In the shallow pool in Shackelford County, Roeser & Pendleton got a well making 1,000 bbls. and extending the field north. Another made 300 bbls.

Louisiana-Arkansas

A dozen good wells were reported from the Urania and Lisbon areas. An extension of the Nevada district, one-half mile northeast was also noted. Lisbon completed 16 wells with a combined new production of 2,730 bbls. and Urania had 7 with 2,250 bbls. initial production.

The Texas Company has abandoned hope of making an oil well of No. 1 Tremont, Lincoln Parish, which was dry at 3,314 feet.

More than 20 tests are operating along the Caldwell-Angelina flexure.

El Dorado reported the largest gain for the week, around 1,500 bbls.

Rocky Mountain Area

The California Co., Ohio Oil Co., Danker interests and Ache interests are planning a wildcat campaign in the Big Horn Basin, Wyoming. The finding of a stray sand in the south end of Elk Basin encouraged hopes of tests on the Garland and Polecat Dome structures.

Montana State Railroad Commission has issued an order reducing the charge on crude oil from Sunburst Field. The increase in production in that field, where eight gushers were reported, has overtaxed the pipeline storage system. Fifteen new wells were started last week and it takes only about two weeks to complete a well. The Fulton Co. has been notified its production cannot be handled and has shut in some of its largest wells. A proration order is expected over all the field.

Operations are being continued in the Colorado Field. The Texas Company brought in a 456-bbl. producer in the Moffat Field.

Midwest Co. completed a Lakota sand well in Salt Creek for 2,350 bbls. natural.

California

The Shell Co.'s No. 1 Vedder in the Poso Creek area, 8 miles north of Kern River Field, opens a new field, probably of comparatively small wells of low gravity from 2,000 feet. No. 1 Vedder was making 160 bbls. of 15.6 gravity oil.

Canada

The McLeod No. 1 in the Turner Valley Field has encountered a third gas horizon, a wet gas flow of 2,000,000 feet a day under heavy pressure at 3,637 feet. The test will probably take between five and six weeks to reach the Royalite producing horizon.

Southwest Texas

Wildcat and semiwildcat operations are increasing, and tests are planned down to the Rio Grande, and across the southern part of Bexar County Houston Gulf Gas Co.'s No. 4 Palacious in the new Randado Pool, is estimated at 6,000 bbls. a day.

Some improvement is reported in the Cole Field of Duval County.

Kitselman & St. Albans completed No. 30 Holbien in Jim Hogg County, the fourth oil well in that new district, which is estimated at 300 bbls.

Michigan

The Sanilac-St. Clair Prospecting Co.'s completion, 15 miles north of Port Huron, and 40 miles east of the Saginaw development, estimated from 10 to 15 bbls., has another oil excitement this time in the extreme eastern part of Michigan.

Pennsylvania-West Virginia

West Virginia is considered the best prospect in the east with some hope of finding production in the lower counties and a possible extension of the shallow pool in the Harvey district of Mingo County. The Big Injun sand pool in Henry district, Clay County, the salt sand development in Scott district, Putnam County, and the Harvey Pool, the chief discoveries of recent years, have not yet reached 1,000 bbls. daily for any one of them. The Clay County Pool is making the best showing.

Central West

There is more leasing in the old producing fields and on the outer edges than for many years. A 20-bbl. wildcat was completed in McLean Township, Shelby County, Ohio, and a 40-bbl. producer in Wood County, the best in several months. A 35-bbl. well in Pike County, Indiana, may lead to extended drilling.

Kentucky-Tennessee

Scouts and operators are reported interested along the State line between Kentucky and Tennessee where the shallow drilling appeals to them.

Venezuela

Constantly increasing development is shown in the recent reports from Venezuela.

Mexico

Seventeen completions in Mexico resulted in five producers and a new production of 12,410 bbls.

Late News From the Fields

OKLAHOMA

The daily average production of some pools in Oklahoma for the week ending May 17 was: Stroud, 2,187 bbls. from 68 wells; Skelly-Ford, 4,776 bbls. from 18 wells, an increase of 1,943 bbls. and 2 wells; Deep Rock, 3,687 bbls. from 29 wells; Ingalls, 7,454 bbls. from 8 wells, an increase of 486 bbls. and one well.

Sherry and others' No. 1 Unallotted, SE cor. NW NW, Section 12-16-10, which was cleaned out to bottom, swabbed 350 bbls. of oil and 200 bbls. of water. This well started flowing at the rate of 100 bbls. an hour.

CALIFORNIA

LOS ANGELES, Calif., May 17.—Shell Co.'s No. 1 Vedder, the discovery well at Poso Creek, is pumping 160 bbls. of 15.6 gravity oil.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., May 18.—The Humble Co. has bought the Associated Oil Co.'s gathering lines and storage tanks in the Mirando Field for $85,000.

GULF COAST

HOUSTON, Tex., May 18.—The Yount-Lee Oil Co.'s No. 4 Gladys on the west flank of the dome at Spindletop is flowing 6,500 bbls. at 2,917 feet. The oil is 23 gravity and the sand is 50 feet higher than in No. 3 Gladys. Flush production there is now 14,000 bbls., the largest in 15 years.

The Yount-Lee Oil Co.'s No. 5 McFadden, the new deep sand producer off the southeast flank of the Spindletop Pool, is flowing 4,000 bbls. per day.

The wildcat tests in the Coastal regions presented nothing of interest during the week. A few new tests have started, but it is expected the advance in prices on "A" and "B" grades will stimulate wildcatting.

In Waller County, George Newman is drilling his second test near Pattison. The Humble Oil & Refining Co. has started No. 2 Kleberg and No. 3 King, southeast of Kingsville, Kleberg County.

The Houston Oil Co.'s No. 4 Heard is drilling in the Refugio gas district.

In Shelby County, Dick and others' No. 1 Fowler, 6 miles east of Center, is around 2,000 feet, showing gas. Casing was set at 1,918 feet.

The Humble Oil & Refining Co. is making geophysical tests in Walker and Montgomery Counties.

The deeper wildcats and semi-wildcats are as follows: Roxana Petroleum Corp.'s No. 2 Allen in Brazoria County, drilling below 3,580 feet; Gulf Production Co.'s No. 8 Davis, at Long Point, Fort Bend County, drilling below 3,680 feet; Vacuum Oil Co.'s No. 3 Teel, southwest of the Saratoga Pool, Hardin County, is around 4,295 feet; Gulf Production Co.'s No. 1 Burrell, Fannette Dome, Jefferson County, drilling around 4,775 feet; Gulf Production Co.'s No. 4 Craig, Hawkins Dome, Matagorda County, around 3,110 feet, and the Ryeade Petroleum Corp.'s No. 1 Kountz, north of the Markham Pool in the same county, drilling below 4,890 feet.

In St. Mary's Parish, Louisiana, the Rio Bravo Oil Co. is deepening No. 1 Glenwild from 3,810 feet. United Oil & Gas Co. is starting No. 2 Salt Mine, Iberia Parish. Terrebonne Oil & Gas Co. is rigging No. 2 fee, Terrebonne Parish, 40 miles southwest of New Orleans. There is a gas field there which supplies fuel to sugar mills.

NORTH CENTRAL TEXAS

FORT WORTH, Tex., May 18.—Gulf Co.'s No. 1 Parsons A in Olden district, Eastland County, has opened a new pool, a mile south of the Dean well, making 288 bbls. from 1,500 to 1,525 feet.

TEXAS PANHANDLE

FORT WORTH, Tex., May 18.—J. R. Phillips' No. 1 Smith, Hutchinson County, has drilled the bridge out and is now flowing 250 bbls. hourly. White Eagle Co.'s No. 1 Smith made 2,160 bbls. the first 24 hours, and No. 1 Johnson, 1,350 bbls. the first 24 hours. Currie Brothers and Phillips' No. 1, Section 14, shot with 600 quarts at 2,900-3,030 feet, flowed 325 bbls. the first hour. Cable Whittenburg's No. 1 Whittenburg, Section 12, flowed 15 bbls. hourly from 2,910-62 feet. In Young County Chenault & Lee's No. 1 Rachuig flowed and swabbed 450 bbls at 1,164-72 feet.

RUNNING COLOMBIA OIL

NEW YORK, May 17.—Oil is now coming through the Tropical Oil Pipe Line in Colombia and is expected to be down at Manonal which is the shipping terminal any day. It is taking about two weeks to fill the line. The first tanker shipment may not be made until June.

TO USE AMARILLO GAS

OKLAHOMA CITY, Okla., May 15.—W. W. Graves, George R. Broadwell and A. J. McMahan of Oklahoma City and R. A. Tipton of Amarillo have applied to the city officials of Plainview, Tex., for an option of four months of a natural gas franchise in the city. They purpose securing other franchises in west Texas and the supplying of gas through a pipe line from the Amarillo Gas Field.

Panhandle is Producing 25,000 Barrels

Canyon Co.'s No. 3 Deepened 3 Feet, Making 250 Bbls. An Hour. Large Natural Wells Add to Texas Field's Output

By C. D. Lockwood
Staff Correspondent, North Central Texas

FORT WORTH, Tex., May 17.—As usual, the "big noise" in North Texas during the past week came out of the Panhandle, where some more large natural wells, supplemented by a few which responded in a healthy manner to heavy shots, boosted the daily average output of the field to practically 24,000 bbls. for the week ended last Saturday, and in all probability pushed it over the 25,000-bbl. mark the early part of this week. Verily, the Panhandle Field is doing more to the prognosticators who prognosticated early in the year than "Babe" Ruth is doing to the sports writers who hazarded some pessimistic guesses on his 1926 clouting early in the season.

The Canyon Oil & Gas Co.'s No. 3 J. A. Whittenburg (formerly No. 2) in the SW cor. of Section 12, Block Y, south of the Canadian River, in Hutchinson County, was one of the best new producers of the week, having flowed 325 bbls. the first hour, natural, from pay lime found at 2,801-23 feet after it was deepened the last 3 feet. It settled down to 250 bbls. an hour Sunday and appeared to be dropping but had a long way to go before getting out of the "big money" class. The same company's No. 1 J. A. Whittenburg was flowing by heads at the rate of 20 bbls. an hour from the lime at 2,763-2,802 feet. The White Eagle Oil & Refining Co.'s No. 1 Johnson, in Section 64, Block 46, was shot with 60 quarts Saturday night and the result was 60 bbls. an hour from the lime at 2,699-2,717 feet. The same company's No. 1 Smith-Capers, in Section 11, Block Y, was shot with 300 quarts at 2,820-2,931 feet and flowed 125 bbls. in the first hour afterward but bridged and was being cleaned out. Heywood and others' No. 1 Cockrell was given a 270-quart shot in lime at 2,950-3,040 feet and produced 350 bbls. in the next 24 hours, settling to 11 bbls. an hour.

In Carson County, the Marland Oil Co.'s No. 1-B Burnett, outpost well which has been watched with great interest, swabbed 50 bbls. at total depth of 3,097 feet and swabbed dry.

The difficulty of piping the Panhandle crude is again forcefully illustrated in the Magnolia Pipe Line Co.'s troubles with its line from the Hutchinson County Pool to Kings Mill. During April, the first full month in which the line was in operation, only 66,505 bbls. of oil was delivered to the Magnolia's tank farm and as a result the company has has started construction on another booster station, finding the original pump station insufficient. The line is only about 22 miles long.

The tremendous drilling activity in the Panhandle has caused the Phillips Petroleum Co. to decide to double the capacity of its natural gasoline plants in the field, at an additional expenditure of $1,250,000 or a total outlay of $2,500,000 on two plants. The Hutchinson County plant, located in the Mary Whitley Survey, is to have a capacity of 100,000,000 feet of gas daily under the new plans, and the Carson County plant, in Section 113, Block 5, will be increased to 25,000,000 feet.

The Phillips Petroleum Co. also usurped the spotlight in lease trading this week, having purchased the Texas Pacific Coal & Oil Co.'s acreage in Hutchinson County, owned jointly by the Prairie Oil & Gas Co., involving some 4,300 acres. The consideration was not made public. The Phillips Petroleum Co. likewise contracted to deliver 5,000 bbls. of crude daily for a year to the Atlantic Oil Producing Co. Otherwise, you might say, this concern was comparatively inactive during the week.

Shackelford's Shallow Pool

Outside of the Panhandle, Shackelford County's shallow wonder pool on the Cook ranch claimed its share of attention because of a new 1,000-bbl. well which extended the pool a location northward and a 300-bbl. producer which extended the producing area a location northeastward. A shallow wildcat in Jack County had 465 feet of oil in the hole, and Archer County furnished some good completions. Cottle County also had a showing of oil along with some water.

The new Shackelford County gusher is Roeser & Pendleton and Marland Oil Co.'s No. A-5-84, which came in Saturday and in its first 13 hours gauged 635 bbls. It made 1,000 bbls. the following 24 hours. The same interests' No. A-9-84 was good for 225 bbls. the first 14 hours and 300 bbls. the next day. Roeser & Pendleton's No. B-1-85 continued to hold up to 1,015 bbls. Monday.

The Amerada Petroleum Corp.'s No. 1 Cook had a sand at 1,325-27 feet which put 300 feet of oil and water in the hole. This is about three-quarters of a mile south of the pool. The Humble Oil & Refining Co.'s No. 2 Cook, a location north of No. 1 and direct west offset to Roeser & Pendleton and Marland's No. A-4-84, topped the sand at 1,285 feet but pulled the top of the rig in; No. 3 was drilling at 850 feet and No. 5 at 175 feet. The next well due in is Roeser & Pendleton's No. B-2-85, which was drilling Monday morning at 1,040 feet. It is a south offset to the big well.

In Brown County, the Prairie Oil & Gas Co.'s No. 1 Turner had a break in the black lime at 2,736-46 feet with a 10-bbl. show and 500,000 feet of gas, which is considered a very good gas showing for this territory. About a mile to the south, the Gibson Oil Co.'s No. 1 Carmichael had 3,000,000 feet of gas at 1,637-38 feet and was running the 8-inch.

In Coleman County, Hughes' No. 1 Morris found a stray sand at 1,668-87 feet with a showing of oil and gas.

Dibrell Pool

The Dibrell Pool, in this county, about 10 miles northeast of Coleman, has been attended by both good and bad luck recently. It was apparently extended about half a mile westward by the Kirby Petroleum Co.'s No. 1 Dibrell, which was flowing by heads from pay at 1,918-32 feet. The Mid-Kansas Oil & Gas Co.'s No. 1 Dibrell, about a quarter of a mile south of the discovery well, was cleaning out after a 40-quart shot, however, and didn't look good. It had sand at 1,875-78 feet. The White Eagle Oil & Refining Co.'s No. 1, quarter of a mile east of the Independent Oil & Gas Co.'s good producer, has been averaging 90 bbls. daily since it was shot with 40 quarts at 1,882-1,902 feet. It actually made 234 bbls. the first 24 hours after the shot but quickly settled to about 100 bbls. and is now making about 80 bbls., although still cleaning out. The White Eagle is building a rig for No. 2, 450 feet north of No. 1 and the Independent Oil & Gas Co. is building a rig for No. 4, located 500 feet north of its No. 2 which offsets the White Eagle producer.

West Texas

There wasn't much important news in West Texas during the week. The Gulf Production Co.'s No. 1 Powell, in Crockett County, was shot with 120 quarts at 2,642-73 feet and cleaned itself. It had 1,500 feet of oil in the hole after the shot and swabbed 110 bbls. The Roxana Petroleum Corp.'s No. 1 Powell had pay at 2,658-60 feet and filled up 1,600 feet of oil in the hole with no water in the first 4 hours. It is 9 feet higher structurally than the Gulf well. The Humble Oil & Refining Co.'s No. 4 Powell had 400 feet of oil in the hole from sand at 2,647-52 feet. This figures out 4 feet lower structurally than the Gulf well.

In Upton County, the Tidal Oil Co.'s No. 1 Union Land Co. had sulphur water at 2,239 feet. F. P. Zoch's No. 1 Keith, which had the pay at 2,564-70 feet, was put on the pump and produced as follows for the ensuing five days: 75, 58, 40, 50, 75 bbls., with no water.

In Crane County, the Magnolia Petroleum Co. staked a location for a well 330 feet south and east of the NW cor. of Section 38, Block 30, University lands.

In Jack County, the Baytex Oil Co.'s No. 1 Snedeker had 465 feet of oil in the hole from sand at 782-85 feet. It was underreaming to set pipe and test.

In Young County, Barkley and others' No. 1 Rogers was estimated good for 100 bbls. on the pump from broken sand at 859-64 feet and oil sand at 864-68 feet. It swabbed dry but filled up 140 feet every 30 minutes.

In Cottle County, the National Potash Co.'s No. 2 Dulaney had a small show of oil at 3,030-35 feet but also had 700 feet of water in the hole.

In Throckmorton County, the Humble Oil & Refining Co. made a location for No. 1 Joe Harris, 360 feet east and 469 feet south of NW cor. Section 975, T. E. & L. Survey.

Wichita County Completions

The Ascot Co.'s No. 1 J. E. Roller-A was dry and abandoned at 1,857 feet. Consolidated Oil Co. and others' No. 1 Dutton was a failure at 1,865 feet. Magnolia Petroleum Co.'s No. 128 Reilly, 10 bbls. at 1,538-40 feet. The location was

(Continued on Page 208)

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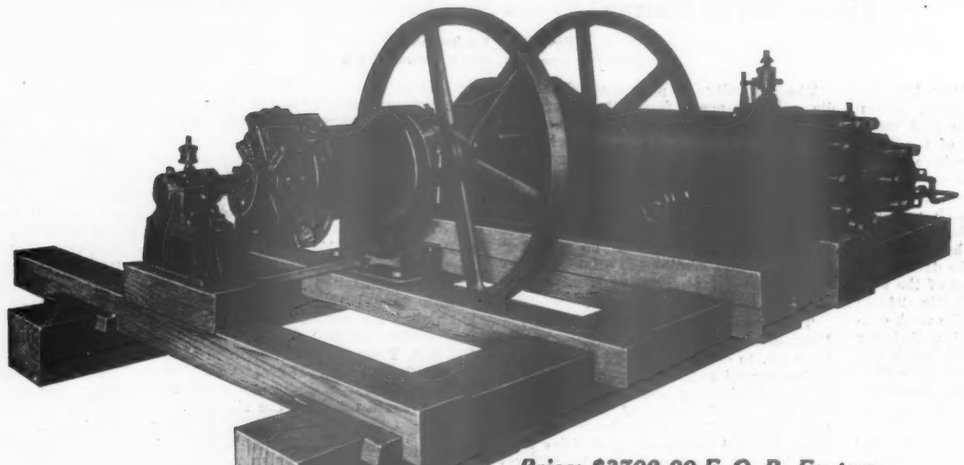

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Oklahoma Panhandle Has Good Gasser

Texas County Scene of Activity With Considerable Development in Prospect. Fuhrman Pool Looks Better

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The advance of crude prices by the Prairie Oil & Gas Co., the discovery of a gas well in the Oklahoma Panhandle country, and the drilling of a good well in the Fuhrman Pool in Section 26-9-9, Hughes County, were the stellar notes of last week's news in Oklahoma.

The Fuhrman Pool well was more or less of a surprise to many who had followed the development of this area, and caused much comment. It will revive interest in the pool and give it another lease on life. The new well is the Independent Oil & Gas Co. and Transcontinental Oil Co.'s No. 9 Harjo, SE cor. NE SW, Section 26-9-9, and the sand was found 3,383-97 feet. The well made 773 bbls. the first 23 hours.

H. F. Wilcox Oil & Gas Co.'s well in the SE cor. SE, Section 21-4-14, Texas County, Oklahoma, carries off first honors for this territory which has recently become quite active. This well had 10,000,000 feet of gas in sand 2,692-2,700 feet. The gas is "wet" and whether the moisture is coming from a body of oil or a body of water will only be determined by further penetration. The gas will be bradenheaded off and the well drilled on until oil is found or the required depth reached. The finding of gas in the Oklahoma Panhandle gives more credence to the view of many who have persistently played this locality, and has caused acreage and royalty prices to advance sharply.

The advance by the Prairie Oil & Gas Co. gave further evidence of the aggressive policy which that concern is maintaining. While a crude price rise was anticipated, it was thought unlikely that the Prairie would assume the lead, and another purchaser of crude was expected to post the advance.

General Activity Over State

There is a general activity noticeable in all sections of the State, and wells have been completed in all regions. The increase in production which has been recorded for the past week is attributable to the Garber Field, where the more shallow sands have produced sufficient oil to offset the decline of the Wilcox sand. The Wewoka deep sand is also maintaining a good rate of production, hovering around the 25,000-bbl. a day mark. Some of the wells have shown a rather sharp decline, but these have been offset by the addition of new producers. In the opinion of many who have given considerable study to the Wewoka deep sand, it will not cover an extensive area, and with the completion of the wells which are now drilling the field will be a matter of history.

Seminole County is prominent owing to the various wells which are making oil. Seminole County will bear observation, as it is in direct line with the trend of production, and is expected to furnish some pools of major size.

The Earlsboro section of Seminole County is disappointing, and until some completions of good size are found, it is unlikely that any additional wells will be started. The Texas Company's well and the Independent Oil & Gas Co.'s wells while in the ranks of producers, are hardly the character which stimulate interest. The Earlsboro Field was started last winter by the discovery of oil in the Morgan & Flynn well in Section 10-9-5. This well was later purchased by the Magnolia Petroleum Co.

The pool opened by the Indian Territory Illuminating Oil Co. in Section 24-9-6, has also been slowed up somewhat by the decline of the discovery well. This well which had a peak production of 1,200 bbls. was choked in, and is now making 400 bbls. on the swab. Simultaneously with the appearance of salt water the well stopped flowing and the production has never come back.

Garber Field

In the Garber Field in Garfield County, the Sinclair Oil & Gas Co. is leading in production. During the past week, this company added another Layton sand well to its list in No. 31 Hartley, SW cor. NW, Section 18-22-3w, which made 1,550 bbls. from sand 3,670-90 feet.

In Seminole County, the Sinclair Oil & Gas Co.'s No. 1 Bull, NW cor. NW, Section 17-9-7, made one or two small flows from broken sand with a total depth of 3,482 feet. A hole full of water was found and the sand cased off and the well is drilling ahead.

The Sunray Pool in Tulsa County, on the Tulsa-Sapulpa highway, was increased by Sunray Oil Co.'s No. 3 Sango, NE cor. NW SE NW, Section 6-18-12, which made 70 bbls. daily from the Turkey Mountain sand 2,173-76 feet. Sunray Oil Co.'s No. 4 Sango, SE cor. NW SE NW, Section 6-18-12, started flowing 100 bbls. an hour from sand 2,158-60 feet. The wells completed in this pool have a high initial production but drop rapidly and are considered very "flashy."

East of Bristow in Creek County, Sherry and others' No. 1 unallotted, SE cor. NW NE, Section 12-16-10, which was reported last week, has been cleaned out to bottom at 1,951 feet and has 1,200 feet of oil in the hole. It will be swabbed.

Southwest of Okmulgee, the Barnsdall Oil Co.'s No. 1 Randall, NE cor. NW NE, Section 10-12-11, is making 150 bbls. daily from sand 2,636-40 feet.

In the Ingalls Pool of Payne County, the Prairie Oil & Gas Co.'s No. 2, in Section 14-9-4, is a failure with a hole full of water at 3,761-77 feet.

At Davenport, the Southwestern Petroleum Co.'s well in Section 21-14-5, which had a showing of oil in the Bartlesville sand, had water break in around the 6-inch casing at 3,923 feet.

The production of the following fields for Monday of this week follows:

Garber Field (All Sands)	
Carter Oil Co.	219
Prairie Oil & Gas Co.	95
Franchot	206
Healdton Oil & Gas Co.	183
Marland and Mid-Continent Petroleum Co.	1,317
Roxana Petroleum Corp.	15,995
Sinclair Oil & Gas Co.	22,523
Miscellaneous	11,400
Total	41,940
Wewoka Deep Sand	
Independent-Atlantic No. 1 Simon	715
Homa-Okla Co.:	
No. 1 Carolina	2,659
No. 2 Carolina	2,327
Amerada Petroleum Corp.'s Nos. 1 and 3 Frederick	6,586
Magnolia Petroleum Co.:	
Nos. 3 and 5 Harjo	4,796
Nos. 2 and 4 Harjo	78
No. 3 Franz	3,391
Prairie (P. & R.)	2,117
Dixie Oil Co., No. 1 Garner	1,052
Ramsey, No. 4 Amos	1,258
Total	24,979
Cromwell	
Amerada Petroleum Co.	391
Berry Petroleum Co.	30
Burke-Greis Oil Co.	248
Carter Oil Co.	2,666
Central Nat. Oil Co.	345
Continental Oil Co.	1,125
Devonian Oil Co.	100
Empire Gas & Fuel Co.	105
Gilliland Oil Co.	126
Gypsy Oil Co.	3,557
Mid-Kansas Oil Co.	202
Houston Oil Co.	469
Independent Oil & Gas Co.	12
Kingwood-Sinclair	74
Laurel Oil & Gas Co.	35
Magnolia Petroleum Co.	60
McMan Oil Co.	878
Mid-Continent Pet. Co.	889
Nowata Oil & Ref. Co.	110
Phillips Petroleum Co.	25
Prairie Oil & Gas Co.	604
Pure Oil Co.	264
Roxana Petroleum Corp.	764
Shaffer Oil & Ref. Co.	460
Sinclair Oil & Gas Co.	2,300
Snowden & McSweeney	330
Southwestern Pet. Co.	969
Superior Oil Co.	106
Tidal Oil Co.	476
Barnsdall Oil Co.	502
White Eagle Oil Co.	13
H. F. Wilcox Oil & Gas Co.	155
Total	18,414
Miscellaneous Wildcats	Barrels
Carter Oil Co. and Emery, Section 4-7-6	46
Magnolia Petroleum Co., 10-9-5	140
Superior Oil Co., 15-9-6	28
Indian Terr. Ill. Oil Co. 24-9-6	641
Kingwood-Amerada 29-8-9	245
Searight and others, 33-10-6	273
Wewoka Deep Sand	
Prairie Oil & Gas Co., Walker	2,279
Amerada Petroleum Co., Harjo	6,733
Magnolia Petroleum Co., Franz	3,289
Magnolia Petroleum Co. Harjo	6,604
Ramsey, Amos	2,029
Homa-Okla Oil Co., Carolina	2,743
Independent-Atlantic, Davis	1,069
Dixie Oil Co., Garner	1,521
Total	26,317
Burbank Field	
Company—	Wells / Bbls.
Carter Oil Co.	281 / 5,625
Comar Oil Co.	7 / 111
Mid-Continent Petroleum Corp.	106 / 1,134
Devonian Oil Co.	16 / 125
Gypsy Oil Co.	193 / 2,618
Kewanee Oil Co.	26 / 228
Laurel Oil Co.	16 / 149
Lewis Oil Co.	15 / 656
Lorraine Oil Co.	15 / 74
Midland Oil Co.	37 / 519
Mid-Kansas Oil Co.	42 / 1,027
Peters-Oliphant	3 / 607
Delmar Oil Co.	16 / 789
Phillips-Skelly	180 / 2,334
Prairie Oil & Gas Co.	127 / 3,100
Producers & Refiners Co.	29 / 215
Roxana Petroleum Corp.	54 / 499
Seamens and others	1 / 7
Simons-Moore	29 / 198
Sinclair Oil & Gas Co.	144 / 1,397
Skelly Oil Co.	30 / 1,067
Tidal-Osage Oil Co.	41 / 466
The Texas Company	16 / 218
Twin State Oil Co.	24 / 334
Total	1,634 / 32,909
Kay County Extension	
George Boles	3 / 189
Carter Oil Co.	11 / 883
Comar Oil Co.	17 / 1,030
Mid-Continent Petroleum Corp.	16 / 721
Gypsy Oil Co.	18 / 275
Laurel Oil & Gas Co.	5 / 115
Mid-Kansas Oil Co.	10 / 710
Phillips Petroleum Co.	32 / 2,063
Prairie Oil & Gas Co.	4 / 95
Pure Oil Co.	4 / 134
Roxana Petroleum Corp.	8 / 207
Dye-Tommlinson	8 / 223
Skelly-Phillips	20 / 301
Sinclair Oil & Gas Co.	5 / 196
The Texas Company	16 / 178
Twin State Oil Co.	15 / 739
Totals	192 / 8,059

Osage County

Laurel Oil & Gas Co. has spudded No. 1, SW cor. NE, Section 27-28-6. In the Burbank Field the Phillips Petroleum Co. has built the rig for No. 1, SW cor. NE, Section 2-27-5. Skelly Oil Co. is drilling at 375 feet in No. 1, SE cor. NW, Section 2-27-5; and No. 8, CNL NW SE NW, Section 2-27-5, is completed for 220 bbls. after a shot of 120 quarts in sand 2,950-96 feet. Phillips Petroleum Co.'s No. 13, NW cor. SE, Section 2-27-5, had sand 2,923-82 feet and made 400 bbls. naturally. It was shot with 140 quarts and made 1,000 bbls.; No. 14, NE cor. NW SE, Section 2-27-5, had sand 2,907-56 feet and made 600 bbls. naturally. It made 850 bbls. after a shot of 120 quarts; No. 16, CEL NE NE NE, Section 12-27-5, is drilling at 1,500 feet. Peters Petroleum Co. and the Plains Oil Co. are drilling at 900 feet in No. 4, SW cor. NW NW, Section 17-27-6. The Carter Oil Co. is drilling at 400 feet in No. 17, C NW, Section 16-26-6. Sinclair Oil & Gas Co. has completed No. 2, NE cor. SE SW, Section 21-25-6, for 15 bbls. after shots of 5, 10 and 20 quarts at a total depth of 2,726 feet.

Prairie Oil & Gas Co. has spudded No. 6, NE cor. SW SE, Section 21-25-6. Phillips Petroleum Co. is drilling at 600 feet in No. 3, NW cor. NE NE, Section 28-25-6.

Wa-Sha-She Oil Co.'s No. 52, SW cor. SW, Section 15-29-9, made 25 bbls. in sand 1,522-78 feet after a shot of 220 quarts. Lewis Oil Co. has rigged up a machine for No. 1, NE cor. SE NE, Section 30-23-8. Tidal-Osage Oil Co.'s No. 5, NW cor. SE SW, Section 24-24-8, had sand 2,146-74 feet and made 25 bbls. after being shot with 110 quarts. Continental Oil Co. has the rig up for No. 5, NW cor. SE SE, Section 29-24-8. Tidal-Osage Oil Co. has spudded No. 3, SW cor. NE SE, Section 20-24-9. Winona Oil Co. is drilling at 900 feet in No. 20, C SE, Section 28-24-10. Pure Oil Co. and others have a rig up for No. 171, NE cor. SW SW, Section 9-23-8. C. B. Peters has a rig up for No. 9, SE cor. NE SE, Section 12-23-8. Beacon Oil Co. and Marland Oil Co. are drilling at 650 feet in No. 25, SE cor. NW, Section 21-23-8. Margay Oil Co. is drilling at 650 feet in No. 8, CNL NE, Section 21-22-9. Pure Oil Co. has the rig up for No. 1, SE cor. NW, Section 16-22-9. Amerada Petroleum Corp.'s No. 19, SW cor. NE SE, Section 16-22-9, made 150 bbls. from a total depth of 2,217 feet after a shot of 60 quarts. J. C. Glenn is drilling at 750 feet in No. 1, SW cor. NW, Section 4-22-10. Elm Oil Co. has a machine in for No. 14, C N half NE, Section 23-22-10. Mitchell and others' No. 1, NW cor. SW, Section 7-21-9, is dry at 2,371 feet. Barnsdall Oil Co.'s No. 10, SE cor. SW, Section 18-21-9, made 10 bbls. from a total depth of 2,464 feet.

Devonian Oil Co. has a rig on the ground for No. 1, CSL SW SE SE, Section 24-21-9. Oklahoma Natural Gas Co. has spudded No. 711, SW cor. NE NW, Section 11-21-10. Devonian Oil Co. and the Tidal Oil Co. have spudded No. 2, CEL SE, Section 27-21-10.

Phillips Petroleum Co. has a rig on the ground for No. 2, CSL SE SW NE, Section 2-27-5. Skelly Oil Co. has the rig up for No. 6, NE cor. NW SW, Section 26-27-5.

Creek County

Gray Oil Co. is drilling at 750 feet in No. 2, NE cor. NE, Section 3-18-11. Devonian Oil Co.'s No. 1-A, CEL NW SE, Section 4-18-12, had sand 2,007-15 feet and made 5,500,000 feet of gas. Sun Ray Oil Co. is drilling at 750 feet in No. 5, CSL NE NW, Section 6-18-12.

Markham & Schoenfeld have spudded No. 1 McElroy, NW cor. NW, Section 6-19-7. Gled Oil Co. has built the rig for No. 3 Ross, NE cor. NW SW, Section 13-19-8. Devonian Oil Co. has spudded No. 3, SE cor. NE, Section 14-19-8. Freeman & Tighe have spudded and shut down in No. 1, SE cor. NE NE, Section 22-18-7. Little Gem Oil Co.'s No. 25, NE cor. SW NE, Section 5-18-7, made 150 bbls. from sand 2,560-2,640 feet. Magnolia Petroleum Co. has the rig up for No. 29 Coker, SE cor. NW NW, Section 16-18-7. C. L. McMahon has spudded No. 2, C NE NE, Section 9-19-9. Kingwood Oil Co.'s No. 1, SE cor. NW NW, Section 30-19-9, is dry at 3,119 feet. Glidden and others have spudded No. 1, NW cor. SE NE, Section 4-19-20. Holmes & Glidden's No. 1, NE cor. SW, Section 23-19-10, made 417 bbls. from sand 1,825-82 feet after a shot of 320 quarts; No. 2 Hickory, NE cor. NW NW, Section 23-19-10, is drilling at 1,500 feet. Holmes and others have rigged up No. 1 Nevins, NW cor. NE, Section 23-19-10. Prairie Oil & Gas Co. has built the rig for No. 1 Prairie, SW cor. NE, Section 23-19-10. Red Bank Oil Co. has a rig and tools in for No. 1 Postoak, NW cor. NE SW Section 23-19-10, and for No. 2 Postoak, SW cor. NE SW, Section 23-19-10. Twin State Oil Co. has built a rig for No. 1 Hickory, SE cor. NW, Section 23-19-10. McCulloch Oil Co. has a rig up for No. 1 Grayson, SE cor. SE, Section 20-18-9. H. U. Bartlett's No. 1, SE cor. NE,

Section 30-18-9, is dry at 3,535 feet. Madden & Madden's No. 1, NE cor. SE SE, Section 36-18-9, made 35 bbls. from sand 2,340-72 feet after a shot of 120 quarts.

Mid-Continent Petroleum Corp. is rigging up to deepen an old well in No. 3 Cale, SE cor. SW, Section 15-17-7. Alvord & West's No. 2, CSL NE SW, Section 14-17-8, made 50 bbls. in sand 2,295-2,349 feet after a shot of 110 quarts. Barnsdall Oil Co. has the rig and tools in for No. 3 Mitchell, SW cor. SE, Section 22-17-8. O. F. Chapman has rigged up No. 1 Sarhilla, SW cor. NW, Section 26-17-8. Interocean Oil Co. has rigged up No. 4 Bigpond, SW cor. NE NE, Section 27-17-8. Magnolia Petroleum Co. has a dry hole at 4,125 feet in No. 13, SE cor. SW NW, Section 10-16-7. The Texas Company has rigged up No. 1 Simmons, SW cor. SE, Section 3-17-9.

Suppes and others are drilling at 560 feet in No. 4 Wockey, CEL NE SW, Section 34-19-12. Slater & Constantine have spudded No. 11, CSL NE SE, Section 14-18-11.

Mountain State Oil Co. has a gas well in No. 2, NE cor. SE SE, Section 25-15-7. Sand was 3,206-17 feet and the well made 40,000,000 feet. Near Bristow the Bu-Vi-Bar Petroleum Co.'s No. 2, CWL SW NE, Section 26-15-8, is good for 3 bbls. from sand 2,445-65 feet. Lima Oil & Gas Co. has a gas well in No. 2, SW cor. NW NW, Section 30-15-8. Sand was 3,294-3,302 feet and the well is completed for 24,000,000 feet. In the Depew district the Prairie Oil & Gas Co.'s No. 3 NW cor. NE NE, Section 11-14-8, had sand 2,440-48 feet and made 45 bbls. after a shot of 50 quarts. Black Gold Oil Co. has a rig up for No. 1-A McGilvray, SW cor. NE NE, Section 30-14-8. Near Slick, Wilson Petroleum Co. has spudded No. 2, NE cor. SE NE, Section 1-15-10. Twin State Oil Co.'s No. 1, NW cor. SW SW, Section 29-14-10, had sand 2,855-59 feet and is pumping 50 bbls.

Okmulgee County

Iron Mountain Oil Co. is drilling at 400 feet in No. 1-A, SW cor. SE SW, Section 35-16-11. S. W. Anthony's No. 3, CWL SE NW, Section 3-16-12, is temporarily abandoned at 1,700 feet. McCulloch Oil Co. has a rig up for No. 1-A Tiger, NW cor. NE NE, Section 30-16-13 Choctaw Oil Producing Co.'s No. 7, SW cor. SE, Section 13-16-12, is temporarily abandoned at 2,115 feet. Superior Oil Corp. has rigged up No. 5 Cowles, SE cor. SE, Section 6-16-13.

Shaffer Oil Co. has built the rig for No. 2 Marshall, NW cor. NE NE, Section 20-15-11. Phillips Petroleum Co. has spudded No. 1, SE cor. NE, Section 23-15-12. Ted Savoy has a machine on the ground for No. 1 Smith, SW cor. NE SW, Section 24-15-12. J. J. Deaner's No. 2, NE cor. NE, Section 34-15-12, is shut in with 1,500,000 feet of gas from sand 2,664-2,706 feet. Darby Petroleum Co. has a dry hole at 2,754 feet in No. 2, CNL NE NE, Section 35-15-12. John H. Rebold has a machine on the ground for No. 1 McIntosh, NW cor. SE SE, Section 5-14-11. H. E. Garrett has a rig on the ground for No. 1 Miller, NE cor. NW NW, Section 30-14-11. Gray Oil Co. has a dry hole at 2,596 feet in No. 3, NW cor. NE SE, Section 14-14-12. T. A. Johnson Co. and others' No. 6, CNL SW NW, Section 22-14-12, is spudded. W. B. Pine has a gas well in No. 2, SW cor. SE SE, Section 25-14-12. Sand was 1,201-36 feet and the well made 3,500,000 feet.

In the Bald Hill district, Humble Oil Co. is drilling at 500 feet in No. 3 Froman, SE cor. SW NE, Section 4-15-13. Kirkland & Son have a dry hole at 2,542 feet in No. 3, C SE, Section 17-15-13. W. B. Pine and others' No. 1, C NW NW, Section 10-15-14, is good for 50 bbls. after a shot of 60 quarts in sand 1,534-89 feet. W. T. Campbell has a rig on the ground for No. 4 Stiner, NW cor. NE SW, Section 9-14-13. E. T. McDowell and others are drilling at 450 feet in No. 1 Lovett, NW cor. SW SE, Section 14-14-13. Vincent & Stansberry have a rig on the ground for No. 1 Checota, NW cor. NE, Section 32-14-13. Crandall & Murta have a rig on the ground for No. 1 Simmons, NW cor. SE SE, Section 4-15-15. Brothers Oil Co. has spudded No. 2 Jefferson, NE cor. NW, Section 33-15-5. R. E. Kessler has a rig on the ground for No. 2 Vanderslice, NW cor. SE NW, Section 32-15-15. Culp and others have a rig up for No. 2 Vanderslice, CSL NE SE, Section 30-15-5.

The Texas Company is drilling at 350 feet in No. 1, SW cor. NW NE, Section 28-13-11. Denver P. & R. Co. has a gas well in No. 6, NE cor. SW NE, Section 32-13-11. Sand was 3,064-95 feet and the well is shut in with 27,000,000 feet. The Amerada Petroleum Corp. and Shelton have a rig on the ground for No. 2 Joans, SW cor. NW NE, Section 5-13-12.

H. C. Marcy's No. 5, CEL SE NW, Section 8-13-12, made 12 bbls. after a shot of 80 quarts in sand 2,901-32 feet.

Pontotoc County

Bryan and others have a gas well in No. 1, NE cor. NW NW, Section 17-4-6. Sand was 1,285-87 feet and the well is shut in with 250,000 feet; a rig is being built for No. 2, SE cor. NW NW, Section 17-4-6. Jack Lloyd and others' No. 1, NW cor. NE, Section 1-3-6, is dry at 1,660 feet.

Seminole County

Magnolia Petroleum Co. is rigging up No. 1, SE cor. NW, Section 17-8-6. Transcontinental Oil Co. has spudded No. 2, NE cor. SW, Section 22-7-7. In the Wewoka deep sand pool the Prairie Oil & Gas Co. has spudded No. 3, NW cor. NW, Section 4-7-8; the rig is up for No. 4, SW cor. NW NW, Section 4-7-8. Amerada Petroleum Corp. has the rig up for No. 13 Dennis, C SE NW, Section 5-7-8. Dixie Oil Co. has rigged up No. 5 Garner, NW cor. NE NE, Section 5-7-8; the rig is built for No. 6 Garner, NE cor. NW NE, Section 5-7-8; the rig is being built for No. 7 Garner, NE cor. NW NE, Section 5-7-8, and for No. 8 Garner, SE cor. NE NE, Section 5-7-8. Gilcrease Oil Co. is drilling at 2,600 feet in No. 1, NE cor. NW SW, Section 5-7-8. Humble Oil Co. is drilling at 300 feet in No. 1, NW cor. SE NE, Section 5-7-8. Independent Oil & Gas Co. and Atlantic Oil Producing Co. are drilling at 2,816 feet in No. 2, NE cor. NW SW, Section 5-7-8; No. 3, NE cor. NW SW, Section 5-7-8, is drilling at 2,100 feet; the rig is on the ground for No. 1, NW cor. SE, Section 5-7-8. Magnolia Petroleum Co. has a rig on the ground for No. 2 Street, NE cor. SW, Section 5-7-8, and for No. 1 Foster, NE cor. SW NE, Section 5-7-8, and No. 2 Foster, SW cor. NE, Section 5-7-8. J. K. Shaffer has a rig up for No. 1, CEL NE SW SW, Section 5-7-8. Dixie Oil Co. is drilling at 750 feet in No. 1-A, NE cor. NW NE, Section 6-7-8.

Pottawatomie County

Tidal-Osage Oil Co. has moved in a rig for No. 1 Scarborough, SW cor. SE SE, Section 3-8-4.

Lincoln County

The Carter Oil Co. has spudded No. 1, SW cor. SE SE, Section 30-17-5. H. C. Wilson's No. 1, SW cor. NE, Section 20-17-6, is dry and abandoned at 3,767 feet. Madden & Madden have spudded No. 1, NW cor. SW NW, Section 35-16-6.

Shaffer Oil Co.'s No. 4, NW cor. NE NE, Section 10-14-5, had sand 3,370-3,421 feet and made 85 bbls. after a shot of 100 quarts; No. 5, SE cor. NW NE, Section 10-14-5, made 35 bbls. from sand 3,365-3,423 feet after a shot of 80 quarts. H. F. Wilcox Oil & Gas Co.'s No. 2, NW cor. SE, Section 5-12-3, is drilling at 1,450 feet.

Prairie Oil & Gas Co. has a rig on the ground for No. 4 Sporleder, SE cor. NW, Section 35-15-5. Amerada Petroleum Corp. and the Marland Oil Co. have a dry hole at 3,418 feet in No. 1, NW cor. SE, Section 36-15-5. Mid-Kansas Oil & Gas Co.'s No. 1, SW cor. NW, Section 36-15-5, is dry and abandoned at 4,360 feet.

In the Skelly-Ford area, the Mid-Continent Petroleum Co.'s No. 3 Earp, NW cor. SW NW, Section 8-15-6, had sand 4,048-52 feet and made 1,800 bbls. initially and is now making 900 bbls.; No 4 Earp, NE cor. SW NW, Section 8-15-6, is now making 850 bbls. from sand 4,073-76 feet. The Texas Company has a rig up for No. 3 Baker, NE cor. SE SE, Section 2-14-5. Magnolia Petroleum Co. has a rig up for No. 1 Slack, SE cor. SW NW, Section 8-14-5. Phillips Petroleum Co.'s No. 4, SE cor. SW NE, Section 10-14-5, had sand 3,390-3,414 feet and made 70 bbls. after a shot of 40 quarts. Magnolia Petroleum Co. has a rig up for No. 3, SW cor. NW SW, Section 11-14-5.

Stephens County

C. R. McCaughrey and others' No. 1, NW cor. SE NE, Section 31-2-4w, had water sand 603-632 feet and is drilling at 850 feet. Murphy Oil Co.'s No. 3, CEL SW SW, Section 2-1-5w, had a show of oil in sand 1,231-39 feet. Magnolia Petroleum Co. has rigged up cable tools for No. 2, SW cor. SW, Section 30-2-9w, and tools are being moved in for No. 11, SE cor. SW NE, Section 25-1-9w. Petroleum Producing Co. is drilling at 950 feet in No. 1, SE cor. SE, Section 11-1-8w.

Garvin County

Empire Gas & Fuel Co. is drilling at 400 feet in No. 1, SE cor. NE NE, Section 27-2-1w. Magnolia Petroleum Co. has rigged up a rotary for No. 12 Harris, NW cor. SW, Section 16-1-3w. The Texas Company's No. 12, SE cor. SW NE, Section 17-1-3w, had sand 1,635-47 feet and made 45 bbls.; a rotary rig is in No. 2 Dudyn, NW cor. NE SE, Section 17-1-3w.

Sequoyah County

Citizens Gas Co. has a failure in No. 1, SE cor. NE, Section 15-11-26, which is abandoned at 2,651 feet.

Marshall County

United Oil Co. has a failure in No. 5, CSL SE SE, Section 25-5s-5, at 660 feet.

Kiowa County

A. C. Varner has spudded No. 1, SW cor. NW NW, Section 5-6-18w.

Caddo County

Briscoe & Hall are drilling at 650 feet in No. 2, SE cor. SW SE, Section 31-6-9w. English Jacobs' No. 3, NW cor. SE SE, Section 31-6-9w, had broken sands 2,148-62 feet and is flowing 60 bbls; a rotary rig is in for No. 4 Williams, NE cor. SE SE, Section 31-6-9w. Briscoe & Hall's No. 5, NE cor. NE, Section 6-5-9w, pumped 75 bbls. from sand 1,876-1,977 feet; No. 1, SE cor. SE NE, Section 10-5-9w, is drilling at 1,300 feet.

Grady County

Stodgner and others have a rig on the ground for No. 3 Chandler, NW cor. SW NE, Section 23-5-8w. Carter Oil Co.'s No. 1, C SE NE, Section 34-5-8w, is dry and abandoned at 2,975 feet. Magnolia Petroleum Co.'s No. 2, C NE SW, Section 35-5-8w, had 25,000,000 feet of gas in sand 2,336-42 feet.

Gant and others' No. 1, SE cor. NW SE, Section 21-3-5w, is drilling at 1,350 feet; No. 1, SW cor. NW SE, Section 27-3-5w, is drilling at 400 feet. White Eagle Oil Co. has completed No. 1, NW cor. NE SW, Section 27-3-5w; had sand 1,347-54 feet and pumped 110 bbls. the first 30 hours and has dropped to 30 bbls. a day on the pump. Magnolia Petroleum Co. is drilling at 650 feet in No. 3, SE cor. NE NE, Section 28-3-5w. Carter Oil Co. is drilling at 750 feet in No. 1, NW cor. NE, Section 34-3-5w. J. D. Todd and others are drilling at 150 feet in No. 1, NE cor. SW SE, Section 34-3-5w. Carter Oil Co.'s No. 3, CSL SE SW, Section 35-3-5w, had sand 1,474-99 feet and is making 57 bbls. Prairie Oil & Gas Co. has a gas well in No. 1, C NE NE, Section 3-4-8w. Total depth was 2,350 feet and the well was plugged back to 1,600 feet and the casing ripped at 1,498 feet. The well is making 12,000,000 feet of gas; No. 2, C SE NE, Section 3-4-8w, is drilling at 400 feet. Briscoe & Hall's No. 1-A, C SW NE, Section 11-4-8w, had sand 2,126-2,200 feet and made 38,000,000 feet of gas.

Garfield County

Marland Oil Co. and the Mid-Continent Petroleum Corp. have a rig on the

(Continued on Page 188)

TESTS ON CARTER-FLEEGER POOL ARE NEARING CRUCIAL POINT

By J. L. Dwyer
Staff Correspondent, Kansas Fields

A flip of the coin was the biggest news from the Kansas fields last week, when that time-honored custom of gambling was used to give first choice in the selection of acreage in the dissolution of partnership between the Carter Oil Co. and Port D. Fleeger.

These parties jointly owned the well which was completed some months ago in Kingman County, and which caused a stirring activity in that part of Kansas west of the Rainbow Bend Pool. The Carter Oil Co. won the toss, and the properties are now divided. The Carter-Fleeger Pool will have its future revealed within the next two weeks. The Allison & Fitzwilliams well is the deepest well in the vicinity, and it has a fishing job at 3,700 feet. There are three wells which should reach the sand within two weeks, and these will govern future operations at Kingman.

Four miles west of Oxford in Sumner County, the Roxana Petroleum Corp., may have opened up a new pool in the deep sand. This operation, No. 1 Miller, NE cor. SW, Section 17-32-2, had what is thought to be the Wilcox sand 3,637-42 feet and is estimated at 200 bbls. The hole slowly filled up with oil and then slopped over, and began flowing 15 bbls. an hour. The Roxana is building tankage to take care of the production and until this is built, the well will not be drilled deeper.

In the Kingman territory, the Ozark Drilling Co.'s No. 1 Richardson, in Section 4-30-6, had a rainbow showing of oil in what is thought to be the Kingman horizon at 4,144 feet. This well is drilling ahead at 4,252 feet.

In Greenwood County, the Syndicate Oil Co. has a 300-bbl. well in No. 3 Austin, SW cor. NE NW, Section 12-22-10. In Barber County, the Skelly Oil Co.'s No. 1 Richardson, SW cor. SW, Section 30-30-14, had 5,000,000 feet of gas in sand 3,115-80 feet. The gas will be drowned out and drilling resumed.

Greenwood County

Manhattan Oil Co. and Phillips Petroleum Co.'s No. 9, SE cor. NE SW, Section 25-23-8, is drilling at 500 feet. Manhattan Oil Co.'s No. 11, NW cor. NE NW, Section 25-23-8, is drilling at 350 feet; No. 1, SE cor. NE, Section 26-23-8, is dry and abandoned at 1,160 feet; No. 11, CSL SE NW NE, Section 25-23-8, had sand 2,537-58 feet and made 50 bbls. after a shot of 40 quarts; No. 12, NE cor. SW NE, Section 25-23-8, had sand 2,560-2,600 feet and made 150 bbls. after a shot of 60 quarts; the rig is up for No. 13 Scott, SE cor. SW NE, Section 25-23-8, and for No. 14 Scott, NW cor. SE NE, Section 25-23-8.

Phillips Petroleum Co. is drilling at 750 feet in No. 4, SW cor. NE SE, Section 26-23-8. Manhattan Oil Co. is drilling at 565 feet in No. 23, NE cor. SE SE, Section 10-23-9; the rig is on the ground for No. 24 Green, SE cor. NE SE, Section 10-23-9. Skelly Oil Co.'s No. 2, NE cor. NE, Section 15-23-9, is making 150 bbls. after a shot of 120 quarts in sand 2,302-2,353 feet. Empire Gas & Fuel Co.'s No. 4, NE cor. SW NE, Section 19-23-9, made 25 bbls. after a shot of 70 quarts in sand 2,520-53 feet. Mission Oil Co.'s No. 6, CSL SE SW SW, Section 19-23-9, made 40 bbls. after a shot of 35 quarts in sand 2,595-2,614 feet. White Eagle Oil Co. has spudded No. 7, SE cor. NW SE, Section 19-23-9.

Syndicate Oil Co. has rigged up No. 1 Fuller, NE cor. SW SW, Section 1-22-10. Mid-Kansas Oil Co. has spudded No. 4, NE cor. SW NW, Section 8-22-10. Hazlett and others' No. 17 DeMalhourie, NW cor. NE SE, Section 12-22-10, is drilling at 750 feet. Prairie Oil & Gas

(Continued on Page 193)

Mr. Walter C. Teagle, President, Standard Oil Company (N. J.), speaking before the Federal Oil Conservation Board at Washington, D. C., Feb. 10 and 11, 1926, is quoted:

(From the official record as printed by the Government Printing Office, Washington)

"Under the conditions now existing the economic tendency will be to *draw upon the whole barrel of crude instead of a part of a barrel as formerly,* for the essential uses and the essential uses for the first time in the history of the industry will now determine both the volume of the production of crude that is necessary, as well as its price.

"The result of this orderly process will be a still further husbanding of the crude supply."

(Italics used are ours)

Universal Oil Products Company
Owners of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Good Completions in Urania and Lisbon

Nevada Field Extended Half-Mile Northeast. El Dorado Shows Biggest Gain. Caldwell-Angeline Tests Are Begun

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., May 17. — The completing of more than a dozen good wells both in Urania and Lisbon, extension of the Nevada Pool and possible extension of the Lisbon Pool to the southwest and the gain in production in the Louisiana-Arkansas fields were the developments in the area during the past week.

The Nevada Pool was extended one-half mile to the northeast by Steele and associates' No. 1 Haynie, NW NW SE, Section 1-14-21, when it came in making 25,000,000 feet of gas spraying a little oil. Eight and one-quarter-inch casing was set at 1,100 feet and the sand was penetrated 28 feet. The well has been closed in.

In the Lisbon area, where Arkansas' highest gravity oil is produced, J. P. Kelly's No. 1 Mitchell, NE SW, Section 20-17-16, had the Nacatoch sand at 2,145 feet and penetrated it 29 feet. Seventy feet of oil rose in the hole and the test is shut down waiting for orders. The test is one mile due west of the Imperial Oil & Gas Co.'s south extensioner of the pool and lies southwest of the pool proper. The Imperial well was completed for a small producer.

Lisbon finished the week last week with 16 new oil wells with a combined production of 2,730 bbls. Several new operations were reported in the field and kept Lisbon's drilling campaign going at its usual pace. At the end of the week Union County had 78 tests drilling, 13 rigging, 27 derricks standing and 13 wells waiting for standard rigs.

In both states 32 oil wells were completed with a combined production of 5,777 bbls. of oil and Lisbon led the field. Seven gas wells were completed with a combined output of 124,000,000 feet of gas and eight failures were reported.

Urania continued to bring in its usual amount of new production from inside wells. While only seven oil wells were completed in that field last week their aggregate initial production was 2,250 bbls. of oil. Three failures were reported in the field and all were in so-called proven territory.

Since Urania's town lots have about been drilled up the drilling campaign there has settled down to normal and the operators' attention is centered now on the outside tests, several of which should be completed in the next few weeks.

Deep Failure

Another deep failure in north Louisiana was recorded during the week when The Texas Company gave up hopes of making an oil well of No. 1 Tremont, Section 27-18-1w, Lincoln Parish. The test was dry at 3,314 feet and has been abandoned.

In the Monroe Gas Field, the usual fair weather drilling campaign got under way and several new operations were reported. A few of the companies plan to drill more than two score tests in that field this summer.

Actual construction work has started on the first big pipe line out of the Monroe Field. It is the Interstate Natural Gas Co.'s 22-inch line running from the heart of the field to Baton Rouge, La. It is being built primarily to supply fuel to the Standard Oil Co. of Louisiana Baton Rouge refinery. The line will be 170 miles in length.

The wildcat campaign along the Caldwell-Angelina flexure got under way during the past week and at the end of the week more than 20 tests were operating.

Another test in that region that will be followed with interest is the test being drilled by Keene and Woolfe, Harry Oliver and Frank Master near Tannehill Switch in Winn Parish. The test is No. 1 Radescich, NE SW SE, Section 21-12-3w. A rig is being moved in and the test is expected to be started within the next week.

Years ago W. W. Hall and associates drilled a promising test in the NW of Section 26. According to the log of the old test, it had a fair showing of oil and gas at 1,011 feet and had a blowout at 1,450 feet. The drill stem was lost in the hole at that depth and the test was abandoned. A few days ago the covering over the old well, which was not plugged properly, was removed and the hole had considerable oil in it. The operators of the Radescich test plan to set surface casing deep and make a thorough test of the 1,000-foot zone.

Production Gain

The combined production of both states continues on its steady climb and last week it gained 4,000 bbls. The biggest gain was made in the El Dorado Field which gained around 1,500 bbls. While Urania and Lisbon both showed gains neither had big gains. All fields in Louisiana gained save Cotton Valley, Haynesville and Homer, and in Arkansas Smackover light, Nevada and Stephens slumped.

Production by Fields

	Bbls.
Louisiana	
Bellevue	2,500
Caddo, light	9,110
Caddo, heavy	2,230
Cotton Valley	5,580
DeSoto and Red River	4,065
Elm Grove	590
Haynesville	10,200
Homer	5,760
Urania	12,915
Total	55,950
Arkansas	
Smackover, heavy	135,455
Smackover, light	17,470
El Dorado	9,265
Lisbon	11,555
Nevada	3,215
Stephens	1,865
Total	178,825
Total both fields	234,775
Total last week	230,785
Difference	3,990

Louisiana
LaSalle Parish

Although Urania did not finish the week with its usual number of completions, its seven new wells kept its new production on an even keel. W. H. Burckhart's No. 1 Smith, Section 26-10-1e, was completed in 5 feet of sand topped at 1,553 feet flowing 800 bbls. and sanded up a short while later.

Hunt and associates' No. 6 Tullos heirs, Section 26-10-1e, is flowing 600 bbls. daily from sand at 1,463-69 feet. Natural Gas & Fuel Co.'s No. 3-B Urania, Section 18-10-2e, is flowing 300 bbls. per day from 5 feet of sand topped at 1,503 feet. George W. Weatherby's No. 1 H. Tullos, Section 26-10-1e, is pumping 100 bbls. from 10 feet of sand topped at 1,542 feet. O. F. Whittaker's No. 3 King, Section 36-10-1e, is flowing 150 bbls. from sand at 1,527-33 feet. Williams Drilling Co.'s No. 3 Herbert, Section 26-10-1e, is making 100 bbls. on the pump from sand at 1,528-39 feet. Arizola Petroleum Co.'s No. 5 Tannehill, Section 36-10-1e, is making 200 bbls. naturally from sand at 1,524-28 feet.

Standard Oil Co.'s No. 6 Urania, Section 13-10-1e, was a failure at 1,560 feet and was abandoned. Two failures were recorded on the Kind lease of the Abercrombie and Co., Section 25-10-1e. No. 9 King, was a hole full of water at 1,548 feet and was abandoned, and No. 14 was dry and abandoned at 1,547 feet. The derrick was moved and location abandoned for No. 7 King.

Six-inch casing was set at 1,545 feet in J. S. Abercrombie Co.'s No. 15 King, Section 25-10-1e. Arizola Petroleum Co.'s No. 6 Tannehill, Section 36-10-1e, is a derrick. Arizola's No. 8 Tannehill, same section, is a derrick. Bailey and associates' No. 1 Holmes, Section 26-10-1e, is rigging up to drill. Beckman and Burckhart's No. 1 State, Section 23-10-1e, is a derrick. Carter and Hurley's No. 1 Urania, Section 8-10-2e, cored dry brown sand at 1,542 feet.

The Cherokee Petroleum Co.'s No. 2 Louisiana Central Lumber Co., Section 19-11-3e, set 10-inch casing at 102 feet. Six-inch casing was set at 1,525 feet in O. W. Clarke's, trustee, No. 2 Bass, Section 25-10-1e. Daniels and associates' No. 2 H. Tullos, Section 25-10-1e, is waiting on a standard rig with 200 feet of oil in the hole from sand at 1,540-45 feet. Six-inch casing is stuck at 1,200 feet in Dixie Oil Co.'s No. 6 Urania, Section 24-10-1e. Total depth 1,535 feet. Hamilton and Musick set 6-inch casing at 1,528 feet in No. 2 Volk, Section 26-10-1e. Hardtner Oil Co. cemented 6-inch casing at 1,513 feet in No. 3 Urania, Section 7-10-2e. Same company's No. 4 Urania, Section 8-10-2e, is a derrick.

A. E. Hudson set 6-inch casing at 1,506 feet in No. 3 Urania, Section 7-10-2e. Hunt and associates' No. 4 State, Section 26-10-1e, set 6-inch casing at 1,476 feet. H. L. Hunt is rigging up to drill No. 10 Tullos heirs, Section 26-10-1e. Hunt, McCurry and Zoder's No. 2 Wimberly, Section 18-10-2e, is drilling plug at 1,502 feet. Jones and associates' No. 1 Norris, Section 25-10-1e, is waiting on a standard rig, and is in sand at 1,559-64 feet.

Keene and Woolf's No. 4 Urania, Section 19-10-2e, is a rig. Louisiana Oil & Refining Co. is bailing to test No. 31-B, Section 25-10-1e, in sand at 1,522-26 feet. Little River Oil Co.'s No. 1 Ratcliffe, Section 26-10-1e, is shut down at 1,548 feet. Louisiana Oil Refining Corp.'s No. 6-A Tremont, Section 35-10-1e, is drilling at 900 feet. Its No. 7-A Tremont, Section 4-9-2e, is a rig. Love and associates' No. 3 Zimmerman, Section 25-10-1e, set 10-inch casing at 100 feet. Montague Oil Co.'s No. 1 Zenoria Lumber Co., Section 11-9-1e, is drilling at 1,100 feet.

McWilliams and Foster's No. 2 Russell, Section 25-10-1e, is waiting on a standard rig, and is in sand at 1,543-48 feet. Minnesota Oil Corp.'s No. 1 J. M. Cotton, Section 25-9-2e, is coring at 1,840 feet. Natural Gas & Fuel Co.'s No. 2-B Urania, Section 18-10-2e, is waiting for the 6-inch casing to set at 1,502 feet. In its No. 4-B Urania, same section, 6-inch casing was set at 1,500 feet, and it is bailing to test at 1,507 feet. Nos. 5-B and 6-B Urania, Section 18-10-2e, are derricks.

Six-inch casing was set at 1,503 feet in Natural Gas & Fuel Co.'s No. 1-E Urania, Section 18-10-2e.

The Ohio Oil Co.'s No. 8 Urania, Section 16-10-1e, is drilling at 1,350 feet. Roberts and associates' No. 6 Russell, Section 25-10-1e, is drilling plug at 1,536 feet. Sherman and associates' No. 3 Russell, Section 25-10-1e, is waiting on a standard rig, and is in sand at 1,554-56 feet. H. R. Smith's No. 1 Hardtner, Section 22-10-2e, is drilling at 660 feet. Ten-inch casing was set at 100 feet in Sterling Incorporated's No. 2 Wineberry, Section 18-10-2e, and is now shut down at 1,200 feet for fuel. Six-inch casing was set at 1,540 feet in George W. Wetherbee's No. 3 Norrid, Section 25-10-1e. Williams Drilling Co.'s No. 5 Herbert, Section 26-10-1e, is waiting on a standard rig, and is in sand at 1,508-20 feet. No. 6 Herbert, same section, is drilling at 1,450

NEW POOL APPARENTLY FOUND TWO MILES NORTH OF ARTESIA FIELD

By Special Correspondent

ARTESIA, N. Mex., May 14.—The Navajo Oil Co. has apparently opened a new pool 2 miles north of the Artesia Field, its No. 1 now swabbing 70 bbls. daily, with the hole partly cleaned out, following a shot of 320 quarts. This well is located in the SE cor. of the NW of the SW of Section 28-17-28, this being due north of the productive area in Section 4-18-28. W. C. Oestreich, president of the company, has announced that 10 more tests will be drilled on the company's 160 acres.

The eastern edge of the Artesia Pool seems to be defined, the Dome Oil Co. having picked up salt water in its No. 6 in the SE cor. of the NE of Section 21-18-28, at a depth of 2,270 feet. The Twin Lakes Oil Co. missed the pay in its No. 8 in the NW cor. of the SW of Section 28-18-28, and is being carried down in the hope of encounterding the 2,700-foot sand. The Fletcher Oil Co. also failed to pick up the lower sand in its No. 1, located in the SW of Section 5-19-28, and are now plugging back from 2,702 to 1,950 feet, production having been encountered in the latter pay.

Another well to be plugged back is the Ohio Oil Co.'s No. 9 New States in Section 4-18-28, which was carried to a depth of 4,035 feet. It will be shot in the 2,250-foot sand.

Two completions were made by Flynn, Welch & Yates in the north extension of the field, these being Nos. 41 and 42, both located in Section 3-18-28. No. 41 is making better than 100 bbls. following a shot from 2,395-2,442 feet. No. 42 is being cleaned out after a shot of 160 quarts at approximately the same depth.

Fishing jobs have delayed completion of the Maljamar Oil & Gas Corp.'s Lea County wildcat, which is expected to open a large productive area. Broken jars in the 6-inch hole at 3,682 feet were recovered after four days fishing and after drilling 20 feet, the bit was lost.

Big Companies Active

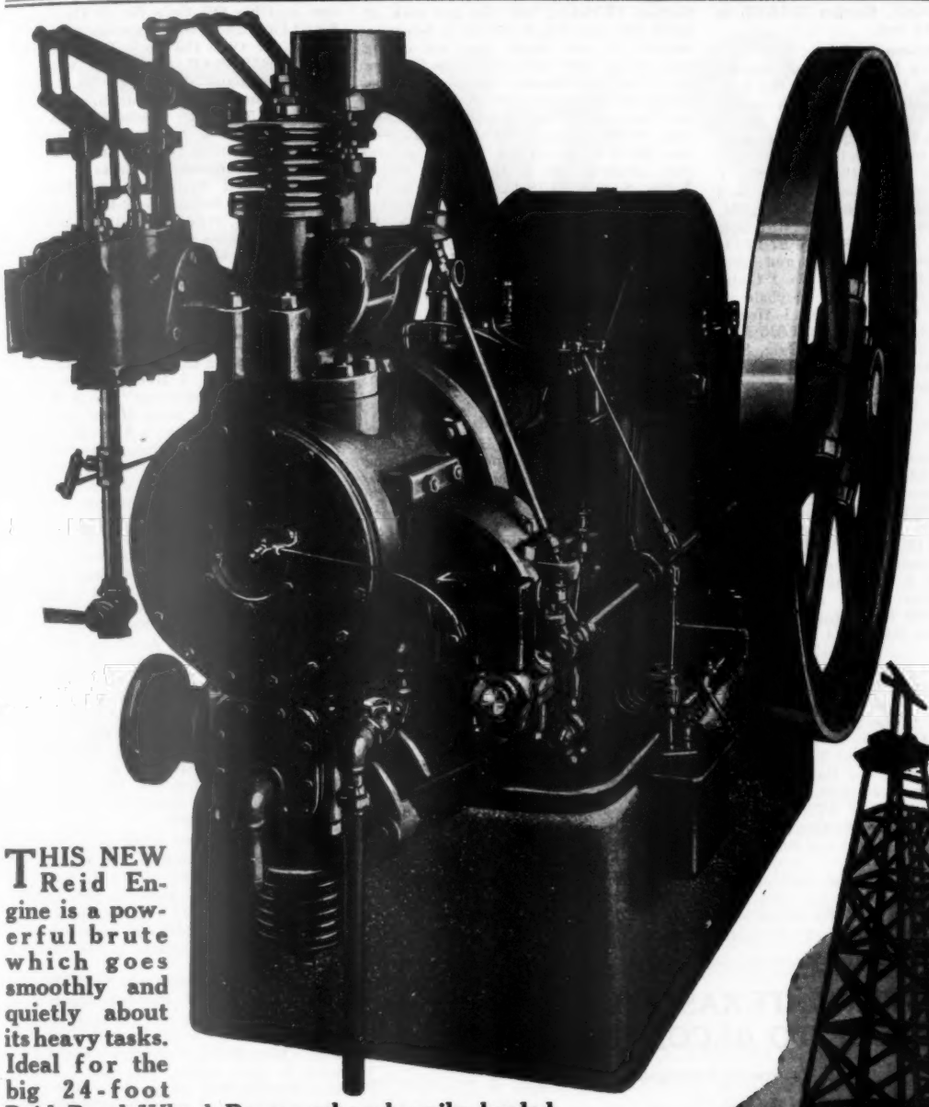
Acreage and royalty in a southeastern trend from the Maljamar well continues to be purchased by the major companies. One of the largest purchasers of the week is the Skelly Oil Co., which has checkerboarded the country to the south and east of the Maljamar. The Gypsy Oil Co. purchased 10,000 acres also in a southeasterly trend. The Prairie Oil & Gas Co. is buying royalties on thousands of acres of fee land in the same direction. The Standard of California is preparing to re-enter southeastern New Mexico, having four representatives in the field.

The Empire Oil & Gas Co. is rigging up for a test on a Government permit in the SE of Section 35-17-27, this being the northwest of the productive area.

The Picher Oil & Gas Corp. has made a location for its No. 3, this being 700 feet north of No. 1, a producer in the SE of Section 12-18-27. No. 2, which

(Continued on Page 186)

The New Reid 65 H. P. Four Cycle Gas Engine



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feet. Yeary and Bristol's No. 2 Urania, Section 8-10-2e, is drilling at 1,300 feet.

Bossier Parish

Another shallow failure in the Bellevue Field was abandoned last week when Autrey and associates' No. 2 Smith, Section 15-19-11, was drilled into salt water at 452 feet. The same operators are moving in a rig for No. 1-C Smith, SE NW NW, Section 23-19-11.

In the Bossier wildcat territory Arkansas Fuel Oil Co.'s No. 1 Murray, Section 14-23-14, is drilling in shale at 3,466 feet. Doern and associates' No. 1 Bollinger, Section 9-22-11, is drilling at 1,200 feet. Woodley and Collins' No. 1 L. & A. Oil Co., Section 14-23-12, picked up the chalk rock at 2,215 feet and is drilling at 2,223 feet.

Caddo Parish

After shooting the chalk rock at 1,614 feet, Ohio Oil Co.'s No. 19 E. K. Smith, Section 12-21-15, was put on the pump and the well is making 19 bbls. daily. Arkansas Natural Gas Co.'s No. 1 C. W. Lane, Section 13-21-15, was completed as a 45,000,000-foot gas well at 3,613 feet. Dixie Oil Co.'s No. 5 Worley, Section 23-22-15, is making 35 bbls. daily on the pump from sand at 1,046 feet.

Six-inch casing was cemented at 1,265 feet at J. H. Askew and associates' No. 1 Davis and Butler, Section 7-20-15, and the plug is being drilled. W. D. Chew's No. 3 State, Section 34-21-16, is waiting for a standard rig at 1,855 feet. Dixie Oil Co.'s No. 1 Jolly, Section 27-22-15, is drilling at 4,028 feet, and No. 16 Muslow, Section 7-20-15, is drilling at 1,240 feet. Casing was cut and all but 300 feet of the 8-inch which stuck at 2,800 feet while being lowered to 3,613 feet, at the Dixie's No. 71 Robertshaw, Section 14-21-15, and the short string is being fished for. Six-inch casing was set at 1,500 feet at Dixie's No. 75 Robertshaw, Section 12-21-15, and surface casing was set at 60 feet and the test is drilling at 1,000 feet at No. 16 on the Dixie's Worley lease, Section 23-22-15. Gilliam Syndicate's No. 1 Sellington, Section 17-21-14, is drilling in salt water at 914 feet.

Galloway and associates' No. 1 Burglass, Section 15-21-16, is arranging to set surface casing at 100 feet. Gulf Refining Co.'s No. 1 J. M. Byrd, Section 2-19-14, is being delayed by a fishing job at 1,046 feet. Six-inch casing was cemented at 2,150 feet at No. 231 Ferry Lake, Section 22-20-16, and at 2,153 feet at No. 232, Section 15-20-16; No. 233 is drilling below the 825-foot level; No. 234 is being rigged and No. 235, 2,800 feet north and 300 feet east SW cor. Section 15-20-16, is a derrick. Gulf Co.'s No. 17 Lane, Section 13-21-15, is drilling in lime at 3,759 feet; No. 1-E Muslow, Section 35-21-15, is drilling in lime at 3,569 feet, and No. 12 Tyson, Section 14-21-15, is boring through shale and boulders at 3,737 feet. Lewis Oil Corp.'s No. 14 D. H. Raines, Section 22-21-15, is drilling at 780 feet. Magnolia Petroleum Co.'s No. 15 Doan Thigpen, Section 5-20-15, was cemented at 2,222 feet to cut off salt water. Magnolia's No. 16 Dillon, Section 24-21-15, is being rigged up as is No. 17 Dillon. Same company's No. 1 Spell, Section 29-21-15, is drilling through hard lime at 2,950 feet, and No. 1 Wiley Bradford, Section 24-21-15, is drilling in lime at 3,237 feet. Six-inch casing was set at 1,422 feet at Magnolia's No. 22 Rains, Section 22-21-15.

Maine Drilling Co.'s No. 1 Cunningham, Section 15-17-14, is shut down at 1,950 feet. McGoldrich and associates' No. 8 Murray, Section 14-21-15, is waiting on a standard rig at 1,620 feet. Ohio Oil Co.'s No. 1 Ardis, Section 1-21-15, is drilling in red shale at 4,440 feet, and No. 18 E. K. Smith, Section 12-21-15, is coring at 3,890 feet. Page and Caldwell's No. 1 Hobbs, Section 29-21-15, is drilling at 1,900 feet. Surface casing was set at 100 feet at S. L. Rickett's No. 12 L. B. Caddo, Section 23-22-15. Standard Oil Co.'s No. 1 Bettie S. Youree, SE SW NW, Section 13-20-15, is a rig. Six-inch casing was cemented at 3,660 feet at The Texas Company's No. 42 C. M. L. Co., Section 23-21-15, and 8-inch was set at 2,694 feet at No. 47, same section. Six-inch casing was set at 1,830 feet at The Texas Company's No. 4 Mason fee, Section 33-21-16. Arrangements are being made to set the big pipe at 1,400 feet at Tholl Oil Co.'s No. 8 Huckaby, Section 14-21-15. Woodley Petroleum Co.'s No. 2 Knight, Section 35-16-12, is drilling at 1,135 feet.

DeSoto Parish

Dixie Oil Co.'s No. 1 Jenkins, Section 9-12-11, got the tools stuck in the hole while underreaming the 6⅝-inch casing to 3,805 feet. Carl K. Dresser's No. 1 Williamson, Section 29-15-14, is shut down at 2,576 feet. Ten-inch casing was set at 142 feet at J. P. Evans' No. 1 L. L. & D. Co., Section 15-21-14, and his No. 1 Sutherlin, Section 20-12-14, is drilling in gummy lime at 1,610 feet. Magnolia's No. 1 Bond, Section 27-12-11, is drilling through lime rock and sand at 2,946 feet. Ohio Oil Co.'s No. 1 Cody, Section 34-12-16, is drilling in shale at 2,525 feet. L. V. Ulrey's No. 1 Heard, Section 18-12-12, is drilling at 1,845 feet, and J. C. Walton's No. 1 Chaffraix, Section 36-12-11, is drilling at 360 feet.

Grant Parish

Bradley and Cozart's No. 1 Holmes, Section 16-19-1e, is rigged up and ready to start but is waiting for a drill stem. Finn and associates' No. 5 Ball and Cody, Section 13-8-1w, is shut down at 2,021 feet. Finn and Hurdley's No. 1 Ball, Section 32-7-1w, is drilling at 1,100 feet. Gulf Refining Co.'s No. 1 Swope, Section 18-19-1e, is drilling at 617 feet. Surface casing was set at 90 feet at Humble Oil & Refining Co.'s No. 2 L. & A., Section 3-9-1w, and the test is drilling at 100 feet. Humble's No. 3 L. & A., Section 3-9-2w, is being rigged up.

Monroe District

Two more gas wells with a combined open flow capacity of 11,000,000 feet of gas were added to the Monroe Field last week. Central Co.'s No. 1 Cole, Section 35-20-4e, was completed at 2,167 feet for a 7,000,000-foot well, and Palmer Corp.'s No. 2 fee, Section 24-19-4e, is making 4,000,000 feet of gas at 2,220 feet. A. Meek's No. 4 LaGrone, Section 36-15-17, was a failure at 2,274 feet and was abandoned.

In the Morehouse Parish side of the field, Natural Gas Producing Co.'s No. 18 Crossett, Section 27-23-5e, tested salt water at 2,450 feet and is to be deepened. In Ouachita Parish, J. M. Huber's No. 2 Edwards, Section 1-18-4e, reached the gas rock at 2,185 feet, and casing is being set. G. E. Jordan's No. 1 Ouachita, Section 17-18-14e, had the gas rock at 2,175 feet and 6-inch casing is being cemented at that depth. Surface casing was set at 268 feet at Maury Drilling Co.'s No. 3 McErwin, Section 20-19-4e. McKenzie and associates' No. 1 McKenzie, Section 6-19-5e, is drilling at 2,000 feet. Palmer Corp.'s No. 1 Milsap, Section 36-19-4e, is drilling in rock at 200 feet. Pioneer Oil & Gas Co.'s No. 1 Nolan, Section 17-18-4e, is drilling at 1,900 feet. Southern Carbon Co. is moving in rigs for three. No. 2-B Grayling, 1,985 feet south and 594 feet west, NE cor. Section 32-21-4e; No. 4 Grayling, 1,980 feet south and 3,400 feet east, NW cor. Section 28-21-4e, and No. 5 Grayling, C NE NW, Section 21-21-4e. United Carbon Co.'s No. 2 Wilson, 1,010 feet north and 2,066 feet west, SE cor. Section 24-20-4e, has spudded. Southern Carbon Co.'s No. 48 fee, Section 35-19-4e, is drilling at 1,634 feet.

Sabine Parish

L. M. Emlet's No. 5 H. L. Bowman, Section 9-7-12, is drilling in hard sand at 3,628 feet. Emlet's No. 7 H. L. Bowman, Section 14-7-14, is drilling at 920 feet. J. B. Greer has moved in derrick pattern to drill No. 1 Peavy-Wilson, Section 11-5-9w. Toro Petroleum Co.'s No. 2 Drake, SE NE NE, Section 24-4-12, is drilling in hard sandy shale at 1,600 feet.

Webster Parish

Alabama Petroleum Co.'s No. 4-B Robbins, Section 21-21-10, is drilling at 100 feet. Gulf Refining Co. is bringing in another well in the Cotton Valley area at its No. 2 Coyle, Section 21-21-10, which has 1,000 feet of oil in the hole from sand at 2,538-42 feet and is waiting for a standard rig. Six-inch casing was set at 2,515 feet at Louisiana Oil & Refining Co.'s No. 4 Crichton, Section 21-21-10. Magnolia Petroleum Co.'s No. 1 Bible, Section 8-20-9, is still milling on the bit at 4,821 feet.

A derrick is up for Magnolia's No. 1 Turner, SW SE NW, Section 21-21-10, and No. 2 Turner, SW SW NE, is a derrick. No. 3 Turner, same section, is waiting for the 6-inch casing to set at 2,540 feet. Ohio Oil Co.'s No. 1 Cox, Section 23-21-10, is coring gray lime and shale at 5,071 feet. Eight and one-quarter-inch casing was cemented at 2,700 feet at Ohio Oil Co.'s No. 3 Holloway, Section 23-21-10. Location has been staked for Ohio Oil Co.'s No. 7 Sidney heirs, SE SW SE, Section 16-21-10. Smitherman and McDonald's No. 1 Oakley, Section 29-33-11, is drilling through rock at 3,570 feet. Southern Crude Oil Purchasing Co.'s No. 1 Munn, Section 1-22-10, is drilling in lime at 1,750 feet.

Louisiana Wildcats

In Caldwell Parish, Charles Daniel's No. 1 Lively, Section 6-12-4e, is drilling at 1,654 feet. Standard Drilling Co.'s No. 1 Cruse, Section 30-11-4e, is drilling at 800 feet. In Claiborne Parish, Gilliland and Ramsey's No. 1-D Taylor, Section 14-23-8, is drilling in sand at 2,720 feet. Drillers are fishing for the bit and collar at 2,000 feet at Triangle Drilling Co.'s No. 1 Hollayfield, Section 32-23-5, and the plug is being drilled out at 3,181 feet at Triangle's No. 1 Keen, Section 7-19-5. Brown and associates' No. 1 Beard, Section 28-19-5, is being rigged up.

The Texas Company's Lincoln Parish deep test, No. 1 Tremont, Section 27-18-1w, was a failure at 3,314 feet and arrangements are being made to abandon the test. In Natchitoches Parish, Forrest, trustee, has moved in a derrick for No. 1 Ayers, NE SE NW, Section 3-13-7, and J. F. Palmer's No. 1 Edenborn, Section 4-11-6, is drilling at 600 feet. Alden Oil Co. is building a derrick in the SE SW NW, Section 13-11-10, Red River Parish, for No. 1 Powell. In Union Parish, the Arkansas Fuel Oil Co.'s No. 1 James Reeves, Section 14-20-1e, is drilling in shale at 3,240 feet, and Clark Creek Oil Co.'s No. 1 Frost Johnson, Section 18-23-1e, is bailing salt water with a show of oil from sand at 2,240 feet. In Winn Parish, Humble Oil & Refining Co.'s No. 1 L. & A., Section 34-10-1w, is drilling at 100 feet, and Humble's No. 1-B Edenborn, Section 1-9-3w, is being rigged.

Lisbon Field

Union County finished the week with 28 completions most of which were in the Lisbon area. Most of the Lisbon wells were completed as husky producers for that territory although a number of small wells were included in the completion list.

Magnolia Petroleum Co.'s No. 5 Slaughter, Section 9-17-16, was the biggest and was finished in 38 feet of sand topped at 2,097 feet for a producer flowing 500 bbls. Wingfield and associates added two more to their string with No. 7-A Dumas, Section 9-17-16, good for 400 bbls. naturally in sand at 2,079 to 2,109 feet and No. 10 Slaughter, Section 9-17-16, is flowing 300 bbls. from sand at 2,074-95 feet. Humble Oil & Refining Co.'s No. 1 Goodwin, Section 16-17-16, is making 150 bbls. at 2,119-47 feet and its No. 1 Slaughter, Section 9-17-16, is pumping 125 bbls. daily from sand at 2,093 to 2,113 feet.

Magnolia's No. 2 Slaughter, Section 9-17-16, is flowing 360 bbls. from sand at 2,098 to 2,131 feet. Owens and associates' No. 3 Slaughter in Section 4 is making 300 bbls. naturally from 20 feet of sand encountered at 2,115 feet. Roxana's No. 1 Flourney, Section 4-17-16, is in sand at 2,108-32 feet and flowing 300 bbls. In Section 4-17-16, Bond & Evans' No. 2 Kilgoe, Section 4-17-16, is making 60 bbls. on the pump at 2,128-76 feet. Marine Oil Co.'s No. 1 Graham, Section 16-17-16, is an abandoned location and No. 2 Graham, formerly No. 1, was completed for a 20-bbl. pumper at 2,104-24 feet. Ohio's No. 1 Goodwin, Section 21-17-16, in the southern end of the pool, is making 20 bbls. on the pump from sand at 2,126-58 feet.

In the southeast part of the pool, J. D. Reynold's No. 4 Dumas, Section 15 17-16, is pumping 20 bbls. from sand at 2,077 to 2,114 feet. Simms Oil Co.'s No. 3 Dumas, Section 9-17-16, was completed for a 25-bbl. pumper in 25 feet of sand topped at 2,125 feet. On the Perry lease in Section 16-17-16, Simms Oil Co. completed three wells, all small. No. 1 is in 28 feet of sand topped at

(Continued on Page 180)

EAST CENTRAL TEXAS OPERATORS REFUSE TO BECOME DISCOURAGED

By Special Correspondent

CORSICANA, Tex., May 15.—the east central Texas area was quiet the past week. The only completion reported was a 10,000,000-foot gas well in Limestone County, but a number of new operations were reported, showing that operators still retain their faith in this hazardous territory.

In Cherokee County the Humphreys Corporation was waiting for casing to set at 175 feet in its No. 1 Ousley, Dillard survey. The Humble Oil & Refining Co. made a location for No. 1 Earle & Ragsdale, N. Johnson survey. The Humphreys Corporation was drilling in hard rock, after setting casing at 1,320 feet in No. 2 Clapp, Jewell survey. Nicholle and others' No. 1 Hill, Dursk survey, was drilling below 350 feet.

F. Haynes in his No. 3 Bounds, Jeffries survey, Henderson County, cored salt water at 3,058 feet and the test is temporarily abandoned.

In Hunt County, the Gulf Production Co. was reported drilling in hard lime at 4,521 feet in its No. 1 Hicks, Bordine survey, the deepest test in the field.

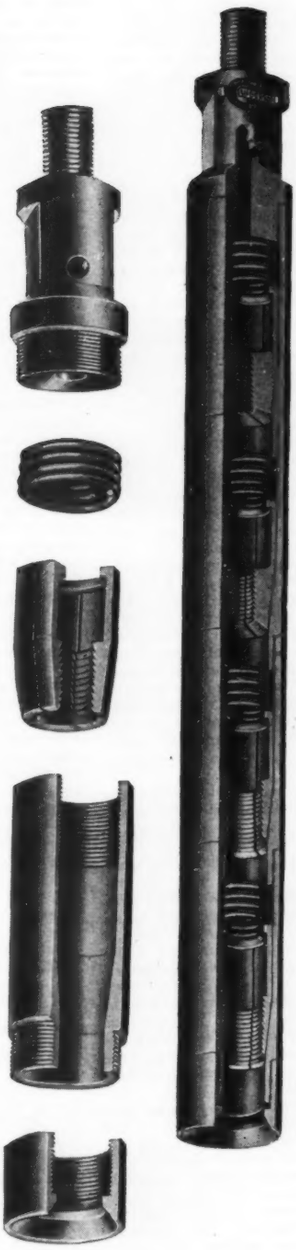
In Limestone County the Transcontinental Oil Co. was temporarily shut down on its No. 1 Ross, Varela survey, west of the Mexia. The well had been drilled to a total depth of 2,899 feet. Reiter & Foster and Lucas & Lewis' No. 1 DeLong, Varela survey, cored a salt water sand at 2,812 to 2,828 feet and was coring ahead at 2,890 feet. The Transcontinental Oil Co. had a derrick up for No. 1 Rooson, P. B. Varela survey. Swearingen & Collicotte were at a total depth of 3,100 feet in No. 1 Locke, Thompson survey. The Austin chalk was penetrated from 2,177 to 2,515 feet. Yoder and others completed a 10,000,000-foot gas well in No. 1 Strathers, McKenzie survey, at 841 feet.

In Milam County, Alexander & Lisles and others' No. 1 Seilke, Sapp survey, was drilling at 2,350 feet.

In Navarro County, Osborne and others have derrick up for No. 1 Mitchell, Hart survey. Pure Oil Co. was drilling below 2,240 feet in chalk, in No. 68 McKie, Broyles survey, top of the chalk at 2,131 feet. Garland Kent was drilling in hard lime at 2,800 feet in No. 1 K. Woolens, J. D. Mathews survey. The top of the chalk lay at 2,432 feet. Barclay & Meadows were drilling at 600 feet in No. 5 Hillburn, Boren survey, in the Barclay Pool.

Drilling is to be resumed in the Kosse territory within the next few days. All leases and other requisites have been obtained and work is to begin immediately. C. F. Lytle of Mexia has taken over the old Patty test which was drilled to a depth of approximately 1,500 feet, on the Curry lease, and will finish it at once. The No. 1 Curry lease is a part of the lease that was formerly held by the Good Oil Co. which drilled there in 1918. The location of the present drilling activity is about 1½ miles east of Kosse, and within 2½ miles of the old Jones No. 1, which was rated as one of the biggest wilcat wells ever discovered, but which quit producing in a few days.

"Eight Sockets in One"



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BETTER BE SAFE THAN SORRY

Open New Field North of Kern River

Shell Completion in Poso Creek Indicates Area of Comparatively Small Wells of Low Gravity From 2,000 Feet

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., May 15.—The discovery of a new oil field is always of paramount importance and for this reason the Shell's No. 1 Vedder in the Poso Creek area, approximately 8 miles north of the old Kern River Field, just outside of Bakersfield, focused the attention of operators on this section of the state and resulted in considerable action on the part of individuals and companies to negotiate favorable leases when it showed an initial daily pumping of 100 bbls. of 15.4 gravity oil from 1,922 feet. The Shell's new well, which was finished with a 6¼-inch oil string and showed 20 feet of oil sand, is located in Section 9, Township 27s, Range 28e, M. D. B. & M. Because of the low gravity oil produced and the small production obtained, due to the small penetration afforded, work will probably go along rather slowly.

All information available at present indicates that the new field will yield comparatively small wells of low gravity oil from the 2,000-foot level, although of course, later developments may change the aspect of the situation somewhat. It is also thought that the productive limits will be quite large in extent, although this opinion, as advanced by a well-known geologist, is merely at matter of personal observation as to productivity and field limitations. The Shell has been pretty well sold on this vicinity for several years and it is not surprising that its efforts were finally rewarded with the completion of even a small well. The company has tied up something like 5,000 acres all through this locality and, although it appears to control most of the newly discovered area, there is still some acreage to be had at a favorable price if early work is contemplated. The Standard proved the existence of oil in this area a good many years ago but water difficulty resulted in the company pulling out.

The Ventura Avenue Field yielded another big flowing well during the early part of the week when the Shell's No. 6 Edison came in barefooted from 5,484 feet. As is usual in this field, the company was unable to cope with the extreme gas pressure and the well is producing with 13 joints of 5⅜-inch hanging in the hole. It is flowing under a pressure of 660 pounds and the 3,750 bbls. of 30.7 gravity oil is accompanied by 3,000,000 feet of wet gas. The Shell has three other drillers on the Edison property, including No. 7, just spudded in. The company also started work on No. 13 Taylor and is now running three strings of tools on this lease and four more on the Gosnell.

The Associated should be in a position shortly to augment its production on the Lloyd property, as Nos. 10, 11, 12, 18, 27, 31 and 33 are rapidly nearing completion. The General Petroleum should also list a completion shortly as No. 10 Notten is at present drilling ahead in the oil sand at 5,095 feet. The Petroleum Securities resumed drilling on No. 1 Willette, following the landing of a string of 11-inch, and the bit is being pushed ahead in this well at 4,166 feet and in No. 1 Orton at 1,570 feet. The Bolsa Chica landed and cemented a string of 8⅝-inch in No. 1 Hartman at 4,308 feet and drilling will be resumed some time during the coming week. G. J. Magenheimer's No. 1 Hartman, located north of the Bolsha Chica's well, is rotating ahead in a sandy shale at 2,466 feet.

Because of topographical conditions, development work in the Ventura Avenue Field has resulted in the drainage of oily water into the Ventura River and operators in this field are planning to overcome this condition by laying a 12-inch concrete pipeline which will carry all drainage into a central sump. A second line will be laid from this point to the ocean in order that the salt water originating in this area can be disposed of without polluting the fresh water streams. Approximately 16,000 feet of pipe will be required and, although the State Fish and Game Commission is insisting on immediate action, it will probably be another 30 days before work can be started, due to difficulties encountered in securing the necessary rights of way.

Long Beach

There were only two new wells finished at Long Beach during the past week and, while this is considerably less than the average number of weekly completions during the past month, this condition has been foreseen for several weeks. It is due, primarily, to decreased drilling resulting from gas depletion and small productivity of the upper zone in the northwest extension. Work was suspended on six additional drillers during the past 10 days and a considerable part of the drilling going on at the present time will never be carried to completion unless deep drilling proves profitable.

The Wilshire Oil Co. is carrying seven wells down to the deep zone and the success which will attend its efforts depends to a large extent upon whether this deep zone proves commercially productive. The company has, perhaps, expended in excess of $300,000 in this area and, while the results obtained to date probably do not warrant this investment, the company will be in an admirable position to take advantage of conditions if the McKeon zone is capable of yielding and maintaining an initial production of around 350 bbls. daily.

The Wilshire's No. 1-C is just about ready to be given a test at 4,875 feet and the 90-foot penetration secured, which is just about equal to that opened up by the McKeon Oil Co.'s No. 7 Cerritos and No. 2 Taylor of the United, should, based on past performances, give the well an initial start of 400 bbls. with a water cut ranging around 10 per cent. The initial production is of secondary importance at the present time as operators are more concerned with the gas pressure, quality of oil which might be expected and the time factor which will govern future production.

If the McKeon zone affords a favorable pressure and yields flowing wells which will not enter the pumping class over night, it is quite possible that a considerable number of drilling projects in the extension at the present time will be started down with this sand as an objective. Future work along this line is dependent to a large extent upon the outcome of some 10 or 15 holes now headed for the McKeon zone. The Julian Petroleum has selected three wells, No. 1 Bruce, No. 1 Chandler and No. 1 fee, for deep tests and it is quite likely that one of them will reach the necessary depth within the next few days. George F. Getty found the top of the McKeon zone in the extension at 4,800 feet and the hole is being reamed preparatory to landing a string of 6¼-inch. Sharp & Reddick's No. 1 Cerritos is scheduled to pick up the deep zone within the next few days as it has just passed the 4,750-foot level.

Not Commercial Producer

The Painted Hills failed to secure commercial production in its No. 10 Cerritos through the open hole method of production, notwithstanding the fact that it was swabbed for a considerable length of time and the company has accordingly put in 150 feet of liner preliminary to putting it on the beam. George W. Johnson's No. 4-A Cerritos also failed to come into production via this method and it will be put on the beam as soon as a 4½-inch liner has been run in. The Ring Petroleum finished its work in this area by completing No. 2 Cerritos at 4,489 feet. Swabbing through open hole was also unsuccessful in this case and the well was put on the beam and finished as a 100-bbl. pumper, the oil testing 19.9 degrees and showing a cut of 4 per cent.

The B. K. & M. Oil Co. has just started swabbing its No. 2 Cerritos but it will be finished in the usual manner, due to the unsuccessful attempts of other operators to finish their wells without the formality of running in a liner. The California Petroleum has just passed the 4,200-foot level in No. 1 Bixby in the northeastern part of the extension and the absence of any upper showings or markers does not make the outlook any too favorable as far as the present productive zone is concerned. The company still has a chance, however, of developing a new and separate structure.

Keck & McWhorter have started reconstructing the derrick over No. 3 Cerritos, destroyed several months ago as a result of the disastrous gas blowout of the McAlpine, Craig & Wilbur well. No. 3 Cerritos was ready for production, having been finished at 4,450 feet, but the entrance of free gas into this hole wrecked the equipment and forced a cessation of work. The Marine Oil Corp. stopped drilling on its No. 54 Cerritos at 5,610 feet and, although it is claimed that the company has found something favorable at this depth, Marine officials deny this and state that it is their intention to plug back to the upper zone. Nard & McNeece are making preparations to finish their No. 1 Cerritos around 4,880 feet but it will probably be another two weeks before the well is ready to be put on the beam. Two new wells, Nos. 17 and 18, are scheduled to be started shortly on the A. T. Jergins lease in the older section of the field and spud will probably be made some time within the next two or three weeks, as material is now being hauled in.

Rosecrans

If it were not for the Union and Barnsdall, there would not be a single drilling well in the Rosecrans Field. These two companies are, however, developing their respective holdings in a systematic manner, the Barnsdall having recently spudded in No. 12 O'Dea and the Union No. 27 Howard Park. In addition to these two wells, the Barnsdall is drilling ahead in Nos. 10 and 11 on the O'Dea lease, while the Union is working on No. 26 Howard Park and erecting a rig for No. 8 Rosecrans. The California Petroleum has re-entered No. 1 Folsom, which has been standing idle for several months at 5,377 feet, and will plug back by stages as a last resort before abandoning it. The outlook for commercial production, however, is decidedly unfavorable, and only one small show was picked up at 4,980 feet. The Julian Petroleum will also charge off about $80,000, as an abandonment notice is being filed on No. 11 Rosecrans.

Inglewood

There was no change in the status of the deep zone situation in the Inglewood Field during the week as far as future development is concerned. The Associated's No. 2 Vickers, although it is flowing approximately 200 bbls. daily, has not come up to expectations and will probably not result in any immediate offsetting. The present production of this well, however, is not any criterion as to what may be expected upon development of the deep zone, as it was more or less of an exploratory test. Before being drilled into bottom water, the well flowed for some time in excess of 1,000 bbls. a day before sanding up and could probably have been cleaned out and returned to production as a satisfactory completion without the addition of any further hole. The company, however, desired to determine the thickness of this new horizon in order that some idea might be gained as to its potentiality. Bottom was encountered around 3,210 feet defined the maximum penetration afforded and the well has since been plugged back to 2,990 feet, from which depth it is at present producing.

The Standard's deep test, No. 3, Vickers Lease No. 1, has just passed the 5,225-foot level and the outlook is rather unfavorable for production. This well, however, is not located favorably with respect to structure and can be classed as an outpost or edge well. Only a limited amount of drilling is being done in this field and, although the Standard has taken over the Pacific's Baldwin property, the company is only working on two holes. A new rig, however, is going up for another well on the Standard's Los Angeles Investment Lease No. 1 and the installation of rotary equipment in No. 6 Stocker presages early work.

Dominguez

The Shell completed two new wells in the Dominguez Field during the past seven days but both of them were com-

(Continued on Page 179)

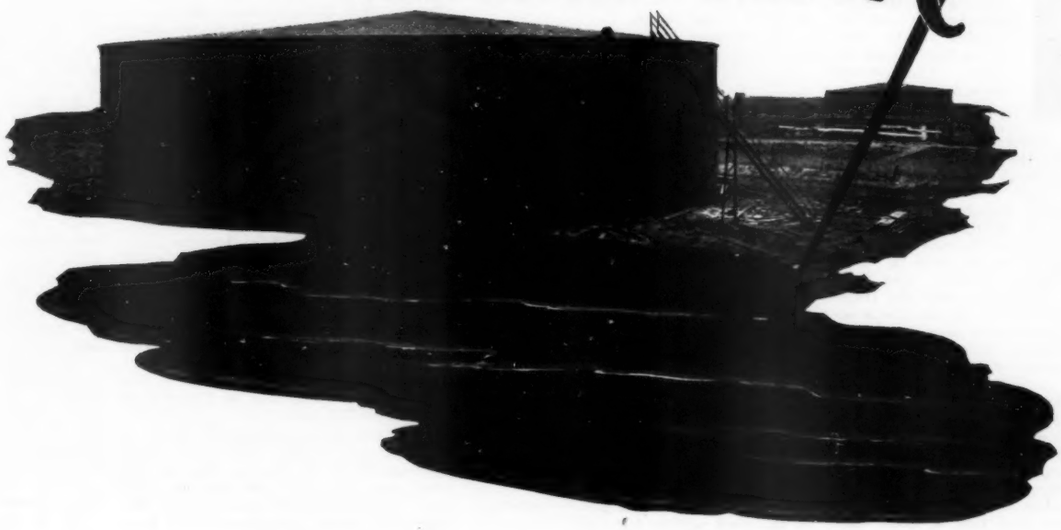
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total This week	Daily Average	Total Last week	Daily Average	This year To date	Same time Last year
Crude oil	152,661	21,809	328,832	46,976	4,459,377	6,513,435
Fuel and gas oil	104,565	14,938	434,423	62,060	3,471,588	237,873
Gasoline	94,947	13,564	293,765	41,966	2,213,906	1,873,620
Tops	.....	.....	.....	.....	74,619	160,730
Coastwise—						
Crude oil	654,434	93,490	387,658	55,380	8,453,081	10,464,028
Fuel and gas oil	298,785	42,683	200,986	28,712	3,210,314	4,371,659
Gasoline	129,420	18,489	98,911	14,130	2,657,554	1,818,262
Kerosene	3,260	466	46,729	6,676	156,268	85,645
Tops	.....	.....	.....	.....	339,820	62,970
Exports—						
Crude oil	109,998	15,714	130,476	18,639	1,534,818	899,907
Fuel and gas oil	231,897	33,128	136,667	19,524	5,654,820	4,925,963
Gasoline	318,086	45,441	137,671	19,667	1,948,608	1,321,089
Tops	.....	.....	.....	.....	.....	170,407
Kerosene	.....	.....	.....	.....	758,018	659,390

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Fuel and gas oil	.....	.....	.....	.....	359,177	.....
Gasoline	.....	.....	156,178	22,311	592,094	332,906
Tops	77,463	11,066	.....	.....	151,161	466,075
Lubricants	.....	.....	.....	.....	154,088	159,968
Coastwise—						
Fuel and gas oil	186,273	26,610	63,715	9,102	1,630,141	1,275,563
Gasoline	116,451	16,636	28,223	4,032	1,296,677	1,078,132
Kerosene	8,620	1,231	.....	.....	139,030	119,037
Exports—						
Fuel and gas oil	74,163	10,595	260,416	37,202	1,337,084	644,483
Gasoline	.....	.....	.....	.....	535,178	228,401
Kerosene	.....	.....	51,080	7,297	699,092	352,431
Lubricants	.....	.....	.....	.....	.....	243,602

a 50,000,000 barrel leak!



THE yearly loss in the oil industry through evaporation amounts to more than 50,000,000 barrels! This loss is as definite and final as though the oil were wasted by pouring out on the ground.

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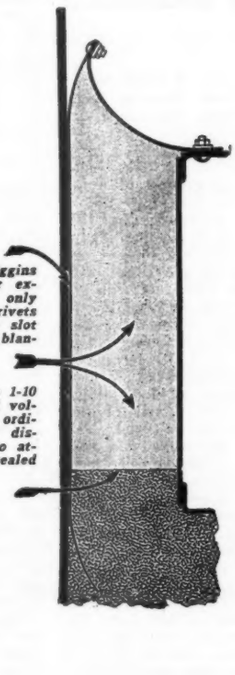
The Wiggins Roof is the most effective means of reducing evaporation losses to a minimum. It completely blankets the oil surface and seals the roof deck gastight at the tank side with a fireproof seal. Losses through evaporation, thermal breathing, and splash-over are almost completely eliminated.

Investigate this thorough means of preventing evaporation losses. Complete information on the Wiggins Roof, or quotations on it for present tanks or on tanks and roofs complete, will be given on application.



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DALLAS—1641 Praetorian Bldg.
ATLANTA—1054 Healey Bldg.
SAN FRANCISCO—1054 Rialto Bldg.

WIGGINS ROOF

OGJ 5-20 Gray

Find Deep Sand Off Spindletop Dome

Yount-Lee Co.'s No. 5 McFadden, on Southeast Flank, Flows 5,500 Bbls. 22 Gravity Oil. New Nash Pool Well

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 17.—A big well in the deep sand section of the Spindletop Pool and another nice producer in the new Nash Pool on the line of Fort Bend and Brazoria Counties, were the features of the week in the Gulf Coast division. The gross production shows an increase of 6,715 bbls. over last week.

Prices for Coastal crude have been changed. The Humble Oil & Refining Co. has posted $1.25 for Mirando, under which head comes crudes produced in Webb, Jim Hogg, Zapata and the Cole-Bruni district on the line of Webb and Duval Counties. The Humble Pipe Line Co. is laying gathering lines in those fields and a 6-inch line to a tank farm near Bruni. During the week the Humble Co. purchased the line of the Associated Oil Co., extending from the Henne, Winch and Farriss district, Jim Hogg County, to Mirando City on the Tex-Mex Railroad.

Early in the week, the Yount-Lee Oil Co.'s No. 5 McFadden on the southeast flank of the dome at Spindletop, came in flowing 5,500 bbls. at 2,550 feet. The oil is 22 gravity. The well was drilled in record time, starting May 3.

The Yount-Lee Oil Co. has definitely established the fact that a deep sand lies off the Spindletop Dome. No. 1 was abandoned as being on the dome. No. 2 McFadden, 300 feet east, is now pumping 100 bbls. at 2,517 feet. No. 3 located 300 feet east and a little south, is flowing 700 bbls. at 2,780 feet. It has produced over 200,000 bbls. No. 4 was drilled to 3,520 feet, but has never been a satisfactory producer. It is 300 feet still farther from the dome than No. 3. Now No. 5 is 300 feet nearer the dome.

The Rycade Petroleum Corp.'s No. 7 Nash, Nash Dome, came in flowing 2,300 bbls. originally at 4,358 feet, 17 gravity oil. It showed salt water. It is now making 1,500 bbls. through ½-inch choker, 2 per cent water. No. 6 Nash is drilling in at 4,040 feet. A crew is pumping mud into No. 2 Flessner to kill the gas.

A total of 27 wells were completed in the Coastal Pools during the week, of which 6 were dry and 3 salt water. The new production aggregates 10,685 bbls. Seven wells were bailing at the close of the week.

The estimated daily average gross production in the pools for the week ending May 15 is placed at 102,880 bbls., an increase of 6,820 bbls. compared with last week.

The following is the estimate for each pool:

Pool—	Gross Barrels
Boling	6,420
Batson	1,410
Blue Ridge	560
Big Creek	1,120
Barber Hill	110
Dayton	65
Damon Mound	855
Edgerly (La.)	620
Goose Creek	9,850
Humble	4,500
Hull	20,500
High Island	600
Jennings (La.)	1,275
Lockport (La.)	4,250
Nash	1,650
Markham	70
Orange	11,300
Orchard	70
Pierce Junction	1,650
Piedras Pintas	125
Spindletop	7,400
Saratoga	1,375
Sour Lake	5,325
South Liberty	5,875
Vinton (La.)	6,210
Welsh-Anse La Bute (La.)	75
West Columbia	9,500
Miscellaneous	120
Total	102,880

The south Texas pools are credited with 90,360 bbls. of the total and those in south Louisiana with 12,430 bbls.

Southwest Fields

The estimated daily average gross production for the southwest fields for the week is placed at 39,790 bbls., an increase of 985 bbls. compared with the previous 7-day period.

The estimate for each field is as follows:

Field—	Gross Barrels
Luling	22,700
Mirando	8,250
Somerset	2,150
Calliham	140
Rockdale-Minerva	975
Lockhart	5,575
Total	39,790
Grand total for week	142,670
Grand total last week	134,865
Increase	7,805

Other Completions

At Boling, the Atlantic Oil Producing Co.'s No. 4 Taylor is good for 350 bbls. at 2,950 feet. The Sinclair Oil & Gas Co.'s No. 1 Taylor was worked over again into a 200-bbl. well at 3,100 feet. No. 2 Taylor is bailing. The Sun Oil Co.'s No. 4 Taylor is blowing gas. The Gulf Production Co. abandoned No. 1 Mick at 2,000 feet after drilling for 500 feet in gyp and salt. It is about 2 miles northwest of the present production. The J. K. Hughes Development Co. abandoned No. 1 Mullins at 3,144 feet. It was 1,500 feet west of production.

The production of the pool at the close of the week was as follows:

Company—	Wells	Prod.
The Texas Company	5	2,600
Humble Oil & Refining Co.	4	2,150
Oxford	2	850
Sinclair Oil & Gas	2	425
Atlantic Oil Producing	2	275
Sun Co.	2	120
Total	17	6,420

In the Hull Pool, the Gulf Production Co.'s No. 65 Phoenix is flowing 500 bbls. at 3,875 feet. The Republic Production-Houston Oil Co.'s joint No. 124 Dolbear is bailing and No. 125 is flowing 200 bbls. at 2,275 feet. The Gulf Co.'s No. 3 Thomas, a work over, bailed salt water. The Humble Oil & Refining Co.'s No. 21 Guedry will make a pumper at 2,975 feet. No. 3 Sterling is a salt water well at 4,450 feet.

In the Orange Pool, the Rycade Petroleum Corp.'s No. 2-B Cow Bayou blew out at 4,800 feet and is throwing mud and rocks. The derrick was demolished. The Gulf Production Co.'s No. 9 Peveto will pump at 4,625 feet. Its No. 22 Hager fee is bailing at 4,650 feet. The Humble Oil & Refining Co.'s No. 5 Myers is pumping 10 bbls. at 3,320 feet. The Kishi Development Co.'s No. 7 McGuire bailed salt water at 4,650 feet. The Texhoma Oil Co.'s No. 14 Chesson is bailing at 3,375 feet.

The Kirby Petroleum-Capital Oil Co.'s No. 4 Hodges, a work over in the deep sand section of the Batson Pool on the north side, is making 200 bbls. at 3,800 feet. The Gulf Production Co.'s No. 167 Wing is a 20-bbl. pumper at 1,100 feet.

S. R. Buchanan is bailing No. 87 Milhome at 1,150 feet.

The Gulf Production Co. abandoned No. 10 Wheat in the Big Creek district at 4,325 feet.

At High Island, the Gulf Production Co. worked over No. 2 Smith and it is flowing 60 bbls. The Sun Oil Co. did the same with its No. 6-C Cade and it is heading 50 bbls. of oil and 50 bbls. of water No. 8 Lockhart was abandoned at 850 feet.

At Goose Creek, the Humble Oil & Refining Co.'s No. 9 Smith, also a work over, is heading 200 bbls. at 2,225 feet.

The Yount-Lee Oil Co.'s No. 3 Gilbert in the deep sand section of the Sour Lake Pool, which came in April 21 at 4,200 feet, is flowing 1,800 bbls., 33 gravity oil. The Minor Oil Co.'s No. 77 fee there is pumping 10 bbls. at 850 feet.

The south Louisiana pools furnished one nice well during the week. It is The Texas Company's No. 95 Latrielle in the Jennings (Evangeline) Pool, flowing 500 bbls. at 1,750 feet.

The same company abandoned No. 1-C Gray in the Vinton Pool at 4,500 feet, which is an unusually deep test for that pool. The Vinton Petroleum Co. quit No. 7 Vincent at 3,100 feet. Wilson & Broach's No. 1 Parks is good for 160 bb's. at 2,400 feet.

In the Edgerly Pool the Rex Oil Co.'s No. 1 Hunter is bailing at 3,200 feet.

In the Lockport district the Vacuum-Gulf joint No. 9 Miller bailed dry at 4,350 feet and is drilling deeper.

Advance Prices

The Humble Oil & Refining Co. announced a new schedule of prices on crudes effective May 15, as follows:

*Gulf Coast "A" grade	$1.60
"B" grade, below 25° gravity	1.50
25° to 25.9°	1.55
26° to 26.9°	1.60
27° to 27.9°	1.65
28° to 28.9°	1.70
29° to 29.9°	1.75
30° to 30.9°	1.80
31° to 31.9°	1.85
32° to 32.9°	1.90
32° to 33.9°	1.95
34° to 34.9°	2.00
35° and above	2.05

*An advance of 10 cents.

The changes apply to Goose Creek, Hull, South Liberty, West Columbia, Pierce Junction and Boling Pools.

At the same time the company posted $1.25 for Mirando crude, the highest quotation of record.

The Humble Co. also met the advance of 25 cents made by the Prairie company on Oklahoma and north Texas crudes.

In addition to the big well in the Spindletop Pool, Wilson and Broach's No. 48 Higgins there is pumping 35 bbls. at 825 feet. The Unity Oil Co.'s No. 44 National is bailing at 950 feet, as is the Baker Oil Co.'s No. 1 Trembly at 1,000 feet.

Miscellaneous

The runs of the Magnolia Petroleum Co. from the Laredo (Mirando) districts during April were 115,036.36 bbls. The company ran a total of 205,417.86 bbls. from the Luling Field during that month and 105,163.33 bbls. from the Lockhart (Lytton Springs) Field.

The Humble Pipe Line Co. is handling the oil from the Rycade Corp.'s well at Nash Dome, running it to storage at West Columbia.

Drilling in the Pools

The Brownie-Babbette Oil Co.'s No. 5 McLean, at Orange, is drilling at 3,240 feet. The Rex Petroleum Co.'s No. 4 Carbello is drilling at 4,775 feet. Humble Oil & Refining Co.'s No. 25 Chesson "A" is drilling at 4,600 feet. Orange Petroleum Co.'s No. 1 Williams is drilling at 4,375 feet; No. 12 Chesson set liner at 3,425 feet. Rycade Oil Corp.'s No. 2

(Continued on Page 189)

SEVENTEEN COMPLETIONS IN MEXICO, FIVE PRODUCERS, 12,410 BARRELS

By George Blardone
Mexican Bureau, The Oil and Gas Journal

TAMPICO, Mex., May 14.—With 17 wells completed for the past week, the northern fields of Mexico chalked up 5 producers with a new production estimated at 12,410 bbls. The best well of the week has just been finished. It is Mexican Petroleum Co.'s No. 21 San Pedro, in the eastern part of the Ebano district. It is rated for 10,000 bbls. at 1,838 feet, a comparatively shallow well. In the Chapacao-Corcovado, north of the San Pedro, Mexican Gulf Oil Co.'s No. 37 Chapacao is rated 250 bbls. at 1,540 feet.

In the old Panuco district, East Coast Oil Co.'s No. 35 Laguna de la Milpa is rated 100 bbls. at 2,205; and its No. 55 is rated 60 bbls. at 2,120 feet. Mexican Gulf's No. 18-A Lopez is officially completed now at the shallow depth of 1,450 feet, and it produces on test 2,000 bbls. It was this well that came in with a head that looked like 5,000 bbls.

The Failures

In the northern fields the failures follow: Ita Mex Oil Co.'s No. 21 W. Maguabes is reported a salt water well at 2,400 feet. Mexican Sinclair Petroleum Corp.'s No. 25 Tananturo is a dry hole at 1,970 feet. National Oil Co.'s No. 16 Chijoles is a dry hole at 2,410 feet. Transcontinental Petroleum Co.'s Nos. 253 and 260, Lot 4, Cacalilao sector, are both failures at 2,400 and 2,005 feet respectively, the latter drilling into salt water. In the Topila sector, Ita Mex Oil Co.'s No. 22 La Mula finished at 2,610 feet, a dry hole, although officially it is being held for orders. In the Ebano district, Mexican Petroleum Co.'s Nos. 9 and 13 Midway are each dry holes at 1,705 and 2,240 feet respectively; and this also follows for No. 10 Mendez at 2,345 feet. Mexican Gulf Oil Co.'s No. 38 Chapacao (Corcovado) is also a duster at 2,250 feet. National Lines' No. 43 Chapacao, is a dry hole at 2,500 feet.

In the southern fields, Mexican Eagle Oil Co.'s No. 26 Cerro Veijo is a dry hole at 2,200 feet.

Panuco-Cacalilao

Drilling operations as the week ended are best epitomized as follows: La Corona Petroleum Co.'s No. 180, Lot 4 Cacalilao, is ready to spud; No. 181, same, cemented 8-inch in the San Felipe at 1,165 feet. In the old Panuco, its No. 107 Delicias is in gray lime with the hole full of oil at 1,680 feet; No. 115 Piedras, cemented 8-inch in gray lime at 1,680 feet. Cia. Pet. Capuchinas, No. 6-A W. Maguabes, Lot 12, cemented 8-inch in gray lime at 1,175 feet; No. 10-A, Lot 12, is cementing 8-inch in hard gray shale and shells at 1,120 feet. Credito Petrolero's Nos. 9 and 11 Las Piedras are each ready to spud; and No. 29, Lot 31 W. Maguabes is in gray lime at 2,187 feet, with an oil show. East Coast Oil Co.'s No. 61 Lag. de la Milpa is testing production showing in gray lime at 1,730 feet; and Nos. 62 and 63, same, are rigging. International Petroleum Co.'s No. 269, Lot 5 Cacalilao, is in gray lime at 1,415 feet, and No. 272 is in gray shale at 680 feet. Mexican Sinclair Petroleum Corp.'s No. 14-B Tananturo is in shale at 140 feet; No. 16-A there is a derrick; No. 23 is in gray lime at 1,320 feet and No. 27 is in shale and shells at 1,420 feet; No. 8-A Lot 1 Camolote is in hard shale and shells at 1,290 feet, and No. 15, same, is spudding. In Cacalilao, Mexican Sinclair is preparing to drill Nos. 49-A and 86-A, Lot 2. Mexican Gulf Oil Co.'s No. 4 Flores, in in gray lime at 1,410 feet. National Oil Co.'s No. 4 Herradura is over 2,000 feet in gray lime, and has shown some gas. New England Fuel Oil Co.'s No. 21-A Delicias ce-

(Continued on Page 188)

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Wildcat Campaign in Big Horn Basin

Finding of Stray Sand in South End of Elk Basin Encourages Hopes of Tests on Garland and Polecat Domes

By Frank B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., May 17.—The north part of the Big Horn Basin in Wyoming is to have a wildcatting campaign the coming season. The California Co., Ohio Oil Co., Danker interests and Ache interests besides others, are planning wells in that part of the State or have already started work. The Allen Oil Co. is generally credited with being affiliated with the Utah Southern Oil Co. and the latter firm is reported to be affiliated with the Standard of New Jersey. The Allen Oil Co. has a well drilling about 800 feet deep on the north end of the Garland anticline, in Park County, Section 10-56-98. This wildcat is located on the north end of the structure and on a portion of the Garland anticline that is separated from the rest of the structure by a series of fault planes. It is thereby considered to be testing entirely new territory.

The Garland anticline lies south of the Polecat Dome owned by the Danker interests of New York and Boston, who recently purchased the holdings of the McMahon Oil Co., giving the Danker interests control of the whole Polecat area. There are two gas wells drilled on the Polecat Dome and one is now connected with the Allen well on the Garland anticline, furnishing gas for fuel.

The Polecat Dome also has a series of fault planes near the middle of the structure and while the wells so far drilled have been on the southern part of the dome, the north part, north of the faults, appears promising for oil. The recent finding of a stray sand in the south end of the Elk Basin Field at 1,700 feet, with considerable oil in same, is regarded as a promising factor in the development of the Garland and Polecat structures.

The Allen Oil Co. has bought the Lovell refinery at Lovell, Wyo., formerly owned by the General Petroleum and other interests and which has been shut down for three years. The deal was closed by C. J. Ritter of the Allen Oil Co. the past week. The Allen Oil Co. will enlarge the refinery to 1,000 bbls. capacity and install the Ryan process for the desulphurization of crude oil. This process is now being used at some refineries on the Pacific Coast and at the Olympic refinery in Washington State. It is particularly adaptable in the refining of black oils and the black oil production in the Big Horn Basin is at a standstill because the refineries there are not equipped to handle the heavier crudes.

Sunburst Transportation

The Montana State Railroad Commission handed down an order affecting the Illinois Pipe Line Co. seriously in the Sunburst Field. This order reduces the carry charge on crude oil in Sunburst Field from 20 cents per barrel to 12½ cents per barrel. The Illinois Pipe Line Co. is ordered to separate the Sunburst to Coutts, Canada line from the rest of its lines in Sunburst Field.

This is considered a very radical order as it reduces the price of transportation of crude oil below any rate in use in this region at the present time. Osage Field in Wyoming is located on the Burlington Railroad so that the pipelines there are only 2 or 3 miles long at the longest, but the transporting charges there is 15 cents per barrel and it is considered that this charge does not give the owners very much profit on their investment. The Osage Field has the lowest rate of any field.

Besides the cut in the carrying price, the commission also ordered the Illinois Pipe Line Co. to cut the storage rate and extend the period of free storage to 30 days' time. Further, the pipeline firm is ordered to charge shrinkage deductions at the rate of 1 per cent instead of the established rate of 2 per cent for oil held in storage.

The ruling of the commission is considered arbitrary in the extreme and as the Illinois Pipe Line Co. is the only common carrier in the Sunburst Field, it is obvious the ruling is directed at this firm although it states that the order applies to all pipeline companies that are common carriers. The Illinois Pipe Line Co. has just bought additional land at Sunburst town for a larger tank farm to take care of the field oil and expects to place four 80,000-bbl. new tanks there at once.

This will increase the present capacity of the Illinois Pipe Line Co.'s storage to a total of 640,000 bbls. in the Sunburst Field and this amount, together with other firm's storage, is expected to prove ample for all needs.

The increase in production during the past few weeks has caused concern to the pipeline company and operators alike in the Sunburst Field. Eight gusher wells came in last week and the capacity of the present pipeline storage system is overtaxed. Fifteen new wells were started last week and it only takes about two weeks to complete a well in the field. The Illinois Pipe Line Co. has already notified the Fulton Oil Co. that its production cannot be handled and the Fulton Oil Co. has shut in some of its largest wells. It is expected that a prorate will be declared shortly all over the field as a consequence of the heavy increase in production.

Great Northern Using Oil

The Great Northern Railroad is embarked definitely on a plan to use great quantities of fuel oil and gasoline for motive power, according to Vice President C. O. Jenks, of that railroad. The installation of gasoline-electric trains on the Harve to Bainville branch line has been completed and the two daily trains are now running there. The Great Northern will shortly change other branch lines from steam to gasoline-electric trains and is now changing all locomotives from North Dakota to the Pacific Coast to oil burners, with the exception of a few engines. An innovation in railroad engines is to be tried out by the Great Northern in Montana shortly. This is a locomotive weighing 100 tons and driven by a heavy oil engine. This engine will be used as a switch engine for its tryout.

The Great Northern Railroad owns much coal land in Montana, but the railroad considers it can assist the oil producers of the State by using fuel oil and oil products and also save money over the cost of using coal for motive power. The coal will not deteriorate by being left in place in the ground. The use of fuel oil is expected to help many small skimming plants throughout Montana that have had the difficulty in disposing of the heavier products after taking off the gasoline.

M. E. Young Resigns

Minal E. Young, vice president and general manager of the New York Oil Co., has resigned from that company and will devote his entire time to the projected pipe line from the Amarillo Field in Texas to Denver and intermediate cities along the route.

Mr. Young's resignation came as a surprise to his many friends in Casper for with the late Frank G. Curtis, Mr. Young built the New York Oil Co. from a small concern, in a comparatively few short years.

Emil Steiger, president of the New York Oil Co., will succeed Mr. Young in that company. Mr. Steiger is from St. Paul and has been associated with Mr. Young in the management of the New York's affairs for the past five years.

Maxwell W. Winter, secretary of the New York Oil Co. also resigned with Mr. Young and will assist the latter in the new work on the Texas line.

The proposed line from Amarillo to Denver will be 360 miles long and is expected to cost between $10,000,000 and $12,000,000. The project hinges to a great extent upon the coming election to be held in Denver when the citizens of that city will vote on the matter of a franchise to the Public Service Co. It is expected that instead of trying to make two corporations supply gas to Denver city, the owners of the proposed line will sell the gas to the Public Service Co. of Denver and thereby do away with the laying of city distribution systems.

Among other changes in the New York Oil Co.'s personnel, Mrs. H. C. Curtis will become secretary and treasurer; Whitney G. Case of Buffalo, N. Y., with Harry P. Hynds, of Cheyenne, will assume the vice presidencies. Mrs. Curtis is the widow of the late Frank G. Curtis, who was the founder of the company and who held the position up to the time of his death.

Denver now has a complete system of mains for the distribution of manufactured gas and these could also be used without change in the distribution of natural gas or a mixture of both manufactured and natural gas.

Colorado Operations

Some excitement prevails in the Fort Collins Field over an old well drilled by the Equitable Oil Co., several years ago and off the main structure. This well went to 2,300 feet and was abandoned as dry, some water was found and the water continued to flow from the well after it was abandoned. Last week the well started to make oil and is still flowing a mixture of oil and water. The well is located on the Ruff ranch.

The Texas Company brought in a new producer in the Moffat Field, Moffat County, Colorado, the past week. The well is making 456 bbls. from the Dakota sand at 3,930 feet, but the location is on the apex of the structure and only 7 feet of sand was found.

On the Iles Dome in Moffat County, the Midwest Refining Co. completed No. 3 on the Parkinson lease on Section 22-4-92, and will have a producer from the shale making 46 bbls. at 2,697 feet.

In El Paso County, Colorado, the Christy Oil Co., drilling on Section 17-17-64, Fountain Dome, appears to have a well in the Lakota sand at 3,000 feet. After running casing, the well was ratholed ahead and the sand showed oil in a 3-inch oil. The well is shut down pending the arrival of officials of the company. This location is a wildcat and no production has yet been established on this structure.

In the Fort Collins Field, the Union Oil Co. of California has reached a depth of 4,400 feet in the Gault-Piatt well No. 2 on Section 7-9-68 and shut down on top of the Muddy sand with the hole well filled to prevent a blowout. Tankage is being placed and the well is expected to be drilled in next week. This well is found to be higher structurally than any of the other wells nearby.

The Travis Raddatz Syndicate at Florence, Colo., has a producer on Section 28-20-69, in the Florence Field, making 40 bbls. from the shale at 2,310 feet. This well was deepened from 1,900 feet and increased production from 10 to 40 bbls.

The Colorado Public Service Commission cancelled the application of the Colorado Oil & Pipe Line Co. for a system of pipe lines in that State. The pipeline firm asked for a charter to lay lines

(Continued on Page 195)

McLEOD TEST IN TURNER VALLEY ENCOUNTERS THIRD GAS HORIZON

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ont., May 15.—In the Turner Valley Field southwest of Calgary, McLeod Oil Co.'s No. 2, LSD 16, Section 1-20-3w5, is drilling in the top of the Madison limestone at 3,637 feet. At this depth, 2 feet in the limestone, an additional wet gas flow was encountered under heavy pressure. The flow was first estimated at 2,000,000 feet a day, but is apparently increasing. Following the strike, the bit was lost in the hole, but has since been recovered. This is the third gas horizon encountered in McLeod's No. 2, the gas flow now aggregating around 4,000,000 feet a day. Royalite's No. 4, the big producer in this field, struck a flow of gas estimated between 1,500,000 and 1,750,000 feet, when it drilled into the limestone, but was drilled 310 feet deeper before getting its big production. McLeod's No. 2 is, apparently, somewhat lower on the structure. The test will probably take between five and six weeks additional drilling to reach the Royalite producing horizon. Shareholders of the McLeod Oil Co. at their annual meeting at Calgary recently heard the reports on the year's activities and re-elected the board of directors. The officers are: President, R. J. Hutchings; managing director, George Cloakey; directors, W. E. and F. H. McLeod; secretary-treasurer, J. D. Edgar.

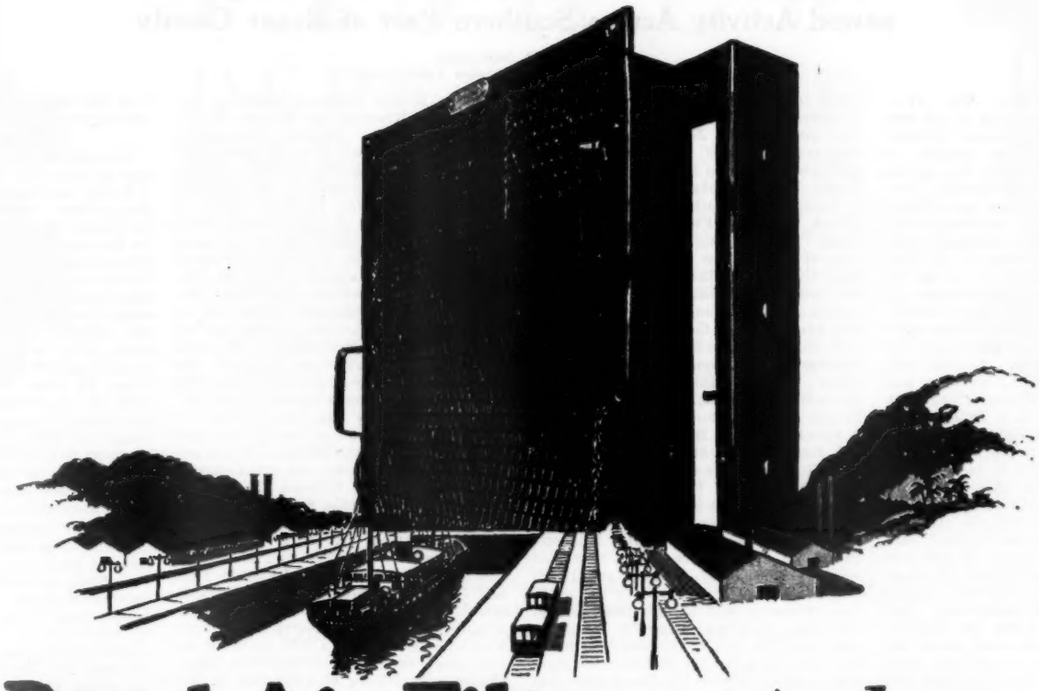
Illinois-Alberta Oil & Refining Co., LSD 14, Section 12-20-3w5, is shut down at 3,576 feet waiting for a shipment of 4,000 feet of 4¾-inch casing. The casing will be run down to the limestone and cemented in.

Vulcan Oils' No. 1, LSD 11, Section 13-20-3w5, has recovered the lost bit and resumed drilling. The test has since got a hard black sand formation around 4,612 feet and is making hole slowly. It is apparently not yet in the Madison limestone.

Royalite Oil Co.'s No. 5, LSD 13, Section 7-20-2w5, is reported drilling at 3,082 feet. The test is unofficially reported to have got a small show of wet gas at this depth. Royalite's No. 6, LSD 16, Section 31-19-2w5, is shut down temporarily at 2,854 feet.

Dalhousie Oil Co.'s No. 3, LSD 10, Section 13-20-3w5, has been swabbing, the oil being lowered 50 to 100 feet every time the swab is operated. The casing has been lowered to within 15 feet of the bottom of the well, and drilling resumed. The casing is now reported to be past the old iron in the well, which previously

(Continued on Page 184)



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To Test Down to the Rio Grande

Wildcat and Semiwildcat Operations Increasing. Renewed Activity Across Southern Part of Bexar County

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., May 17.—Heavy rains throughout most of the San Antonio territory have greatly delayed drilling operations and the starting of new tests due to difficulty in moving rigs. The week has been notable, however, chiefly in wildcat and semiwildcat operations, and additional indications that the territory south of the Randado Field in Jim Hogg and on down to the Rio Grande at Rio Grande City is to see increased wildcat drilling and increase in activity across the southern part of Bexar County and the completion of an additional gasser in the new field south of the Ina Field in Medina. Notable also is the fact that though no producer has been completed in the Piedras Pintas salt dome territory at Noleda in Duval County, where the Humble Company on December 20 brought in No. 4 Walsh, as a discovery well at 3,623 feet, now flowing and pumping about 250 bbls. a day on the average, Humble is starting two new tests, one to the north and the other to the west, and has ordered 4½-inch casing to set in No. 5 which is 450 feet southeast of No. 4 and will set 13 joints of screen so as to test the seven sands in that well, all in the same test. The bottom of the hole is 4,100 feet, approximately, and each of the seven sands has carried some oil. Two of the four tests started soon after the discovery well was brought in have been abandoned. These are the Hughes test, 1,800 feet north of the discovery well, and the Grayburg Oil Co.'s, three-quarters of a mile north. Magnolia Petroleum Co. is drilling at about 3,300 feet a half mile northeast, and Moody-Seagraves and Morgan are standing at 3,619 feet, having failed thus far to pull the liner to drill deeper.

Big Well at Randado

In the Randado Field which started with the discovery well by Pippin-O'Byrne and others on Survey 291, 7 miles south of the Henne, Winch & Fariss Field in Jim Hogg County last September, the Houston Gulf Gas Co.'s No. 4 Palacious, in the same section and a few locations west of the discovery well, was allowed natural flow for five hours in steel storage and made 1,250 bbls., or at the rate of 6,000 bbls. a day. Due to lack of storage and no pipeline connection it was then choked down. The total depth is 1,260 feet. Magnolia Petroleum Co. on Survey 267, a few locations southwest of this, at 1,216 feet, brought in a gas well and Simms Oil Co., a half mile north of the discovery well and offsetting a Houston Gulf Gas well that is making gas and oil, completed its second gas well. Houston Gulf Gas Co. with casing set at 1,279 feet in its No. 5 well, which is east of the discovery well and in Block 11 offsetting a Magnolia well in Block 10 of Survey 291, has a well making oil by heads and, while it looks like a good well, does not look as good as the same company's Nos. 2 and 4 to the west of the discovery well. The wells to the west are getting the sand higher up. The field is thus beginning to define itself. Simms may lubricate its No. 2 and drill a little deeper in hopes of getting oil.

Line Completed

Randado Pipeline Co. Tuesday of last week completed its 7 miles of line north to the Henne, Winch & Fariss Field where it made a connection with the Magnolia line which runs to Magnolia tank farm at Oilton north of Mirando City. Due to all steel storage in the new Randado Field being full the wells must still be on choker until steel storage is ample to handle the situation and they will then be put on full production. Humble Oil & Refining Co., which is building a tank farm at Bruni in Webb County, 4 miles from the Cole Field in Duval and 12 miles from the Henne, Winch & Fariss Pool southwest in Jim Hogg County, as reported last week, is laying a 6-inch pipeline south from the Henne, Winch & Fariss Field. It has also started laying a 4-inch line south from the Henne, Winch & Fariss Field to the Randado Field. The Randado Field thus far consists of only a few producers. Houston Gulf Gas and William F. Morgan have five wells completed, Magnolia four oil wells and a gasser and Simms two gassers and besides these there is the discovery well. Several others are being drilled. The discovery well is pumping about 100 bbls. a day. Houston Gulf Gas Co. is moving in tools for its Nos. 6 and 7. Magnolia Petroleum Co. is moving tools to its No. 2 Merchant State Bank on Survey 267, 300 feet north of the No. 1, completed at 1,216 feet the past week as a 35,000,000-foot gas well. It is thought possible that casing was set too high in No. 1 and it will be set lower in No. 2 to cut off the gas and get an oil well. Magnolia Petroleum Co. has everything west and south of Survey 291. It has a small well on the south of Survey 291 in the north line of Survey 415 cutting the field off, seemingly, from that direction, but if the field proves to run to the west, Magnolia has everything in that direction for more than a mile. Simms Oil Co., a half mile north of the discovery well, has the northwest quarter of Survey 291 and is moving to the southeast corner of that lease to drill an offset to one of the Magnolia wells on Block 10. Black & Hucksson are down several hundred feet in No. 1 in the southeast corner of Block 13 of Survey 291, a diagonal offset northwest of the discovery well. Morgan Oil Co. has spudded in on No. 1 in the northeast corner of Block 12 of Survey 291.

South to Rio Grande

One of the important features of the ned Randado Field is the interest it is arousing in the territory south to the Rio Grande River at Rio Grande City at which point the Reynosa escarpment crosses into Mexico. It is 70 miles (airline) from Mirando City to Rio Grande City, at the north end of the Mirando Field. The Charco Redondo Field in the lower part of Zapata County, with a score of wells producing at a depth of 140 to 160 feet, is midway between the two. The Randado Field in Jim Hogg is midway between the Charco Redondo Field and Mirando City. All of the Mirando production is more or less on the Reynosa escarpment. Oil men going over the territory south of the Randado Field are convinced there will be several more pools opened up in the territory down to Rio Grande City in Starr County. A lot of leasing has been done in Starr but the drilling has not got under headway yet to any great extent.

In the territory between the Charco Redondo Field and the production in the Mirando Field on the north Rollin V. Hill is preparing to go back into his test on Villa ranch over the line in Zapata and midway between the Randado Pool and the Charco Redondo Pool, which is standing at 1,761 feet and will deepen it to 2,500 feet or more. North of it Harry Fansler is preparing to drill on the Comitas ranch and north of that The Texas Company is drilling at 4,138 feet in No. 2 Jennings. A little northeast of the Hill test Allworth Brothers have derrick up on Block 39 just over the line in Jim Hogg County and Simms Oil Co. has spudded in No. 1 Leyendecker on Survey 143. Southeast of Hill and in Jim Hogg, C. H. Bailey is preparing to drill on Survey 271.

East of these tests and extending up to the town of Randado, which is just east of the Randado Field, Benedum & Trees have three tests drilling on the Wilbur Allen ranch, No. 1 Allen, drilling at 2,768 feet; No. 3 at 300 feet and No. 2 at 630 feet, and the National Oil Co. is waiting for rig on its No. 1 Allen.

Bexar County

Humble Oil & Refining Co. set 100 feet of 12½-inch surface casing in No. 1 Yturri in Bexar County 6 miles southeast of San Antonio and a mile east of its Minna Coreth wells drilled last year. It has assembled 1,500 feet or more of 8¼-inch casing and since the No. 2 Minna Coreth, the deeper of the two tests on that lease, stopped at 1,466 feet it is assumed the 8¼-inch will be set to cut off the sulphur water and the test drilled down for a deep test. Humble's block of some 20,000 acres extends over a territory 15 miles long and it was assembled at considerable expense. Surface indications of structure and logs of a large number of wildcat wells drilled across the southern part of Bexar County are helping to define the area indicating a chance for some deep pools and strong probability of a number of shallow ones.

Duval County

While there have been no new completions of importance the past week in the Cole Field in the edge of Duval County, developments the past week show some improvement in the field. The Houston Oil Co.'s No. 1, which came in some weeks ago an offset to the Cin-Tex discovery well, has started to flow and is making about 450 bbls. of oil a day. The Cin-Tex came in an oil gusher making no gas or but little gas. When the Houston well failed to flow though 300 feet away it looked a bit discouraging. It was later put on the beam and pumped and is now flowing. Cole Petroleum Co.'s No. 18, which offsets the discovery well on the southwest and which came in a gasser, is opened periodically and is now making a little oil. Cin-Tex's No. 6, which is a little north of the discovery well, has set casing and acts as though it would come in like No. 1 making a large volume of oil and little or no gas. Cin-Tex's Nos. 1, 2 and 5, combined, are flowing about 550 bbls. daily and in addition are making a little water which varies considerably in quantity, not running over 15 per cent of the volume. Cin-Tex is rigging up on No. 7. Cole is rigging up 300 feet southwest of No. 17 for the next test. Barkley-Meadows & Morgan are on top of the sand in No. 2 in Block 4 of Section 10. No. 1 was a big gasser of 35,000,000 feet or more. No. 2 will attempt to case off the top of the sand with the gas and get an oil well. Cole has casing set in No. 20 on Block 8 of Section 10, ready to bring it in, and has started No. 23. Gibson Oil Corp.'s No. 1 Ayres, a mile east of production in the field, at 2,000 feet is in a cavity and is shut down. George M. Ball, another mile to the east, is drilling at 1,776 feet in No. 1 Roach.

Duval Wildcats

On the Palangana salt dome in Duval County a few miles northwest of the Piedras Pintas salt dome Humble's No. 4 Schallert is in sandy shale at 3,511 feet and the same company's No. 8 Singer is rigged up and waiting for water. Humble's No. 4 Dowdy (fee) in the northern edge of the county is drilling at 600 feet. Simms Company's No. 1 Schallert on the Palanagana salt dome is drilling at 2,310 feet. Murchison & Fain have the derrick up and are moving in on the Peters ranch in the western part of the county. Benedum & Trees on the Southerland ranch set surface casing and have resumed drilling. Maurer & Duggan in the Hoffman well on Survey 123 is drilling at 2,360 feet. Graham is drilling at 2,450 feet in No. 1 Beall in the northeastern part of the county. Simms Oil

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OPERATIONS IN VENEZUELA FIELD SHOW INCREASING DEVELOPMENT

By Alfred F. Smith

MARACAIBO, April 30.—In the La Rosa Ambrosia, operations of the Venezuela Gulf Oil Co., production has had a natural decrease to about 17,000 bbls. and probably will decline a bit more, possibly to 15,000 bbls. daily. The carrying of the Gulf Lake transportation is at present about 13,000 bbls. per day, but more tankers are expected shortly to take care of the increased production that is quite sure to come with the completion of the wells now drilling.

Lago production is up to about 17,000 bbls. due to the well that came in a week ago. Lago is allowing the Gulf to use some of its tankers. Its working rigs are:

No. L-50, drilling at 1,735 feet; No. L-60, drilling at 600 feet; No. L-49, setting liner at 2,005 feet; No. L-58, spudding; No. L-93, derrick completed; Ambrosio No. 7, standing cemented at 1,213 feet; No. 3, derrick completed; No. 101, building foundation; No. 8, building foundation. Two other locations are being made at Ambrosio.

Venezuela Oil Concession's production seems to be a little better, probably is up to 28,000 bbls. daily. Several wells have been cleaned out and brought back to good flow. The only completions have been No. R-60 which appears to be principally water and No. R-61 which came in as a fair well but with considerable water due to a bad cementing job.

In the La Rosa and Ambrosia fields Lago's No. 47 came in for 2,600 bbls., and V. O. C.'s No. R-55 was good for 2,000 bbls. Due to two Gulf wells being closed in on account of fire damage and to the small falling off, production is just about the same for the field, V. O. C., 175,000; Gulf, 134,000, and Lago, 130,000 bbls., total, 439,000 bbls.

The V. O. C. working rigs in La Rosa Field follows: No. R-55, came in at 2,320 feet for 2,000 bbls.; No. R-17, rigging up for standard tools at 1,980 feet; No. R-56, 6¼-inch casing cemented at 2,380 feet; No. R-58, drilling at 2,502 feet; No. R-62, drilling at 1,525 feet; No. R-47, standing; No. R-54, fishing at 2,488 feet; No. R-59, standing at 1,590 feet.

Gulf Operations

The detailed statement of Gulf Co. operations would seem to indicate a drilling program that should give considerably increased production in the comparatively near future in both La Rosa and Ambrosio fields. All locations are in proven territory.

La Rosa Field.—Superior No. 1, cleaning out to deepen and put on pump; No. 2, temporarily shut down; No. 3, sanded and shut down; No. 4, foundations only; No. 5, sanded and shut down; No. 6, producing 150 bbls. by heads; No. 7, producing 200 bbls. by heads; No. 8, sanded

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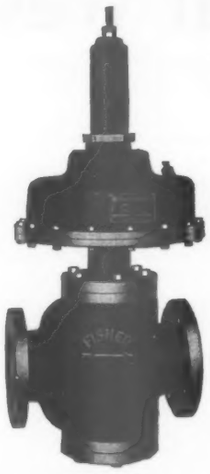

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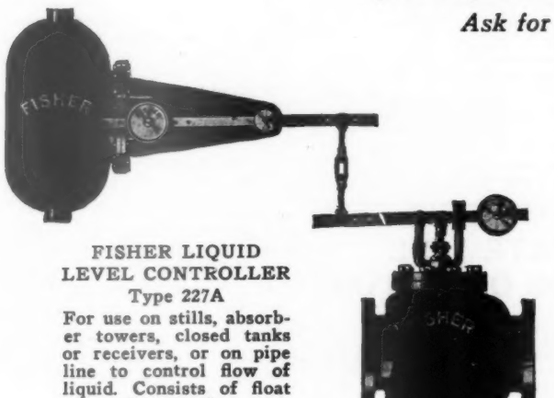

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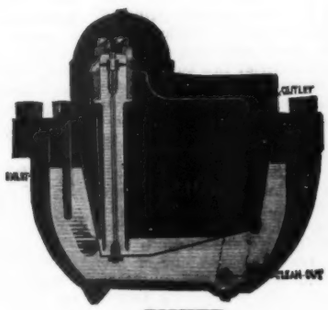

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Leasing Activity in the Central West

More Interest Being Shown in Development Than for Many Years. Some Good Wells Completed During Week

By Whit

Staff Correspondent, Central West Fields

FINDLAY, Ohio, May 17. — All sections of the Central West Field show improvement the past few days and several important finds were made. In the Lima Field, a 20-bbl. wildcat venture was brought in on the Henry Ernest farm, McLean Township, Shelby County, Ohio. In Perrysburg Township, Wood County, same field, a 40-bbl. producer was found on the DeVerna farm, the largest for that area for many months.

Central Ohio Field records some good wells. On the George Schuler farm, Hardy Township, Holmes County, a 125-bbl. Clinton sand well was found that extends the oil producing area to quite a distance. In Kilbuck Township, Holmes County, the East Ohio Gas Co. hit a 5,000,000-foot Clinton sand gasser.

In the stray sand in Martinsville Township, Clark County, Illinois, a 65-bbl. producer was found on the Harriett Slater farm.

A wildcat venture on the Lulu P. Harvey farm, White River Township, Gibson County, Indiana, was a dry hole. In Logan Township, Pike County, same state, a wildcat on the Miley-Chandler farm showed a flush of 33 bbls.

The past few days has brought out the operator and many locations have been staked out in the Ohio, Indiana, Illinois and Michigan fields and the weather being ideal many of these tests will get busy as soon as the material can be taken to the various leases, and contractors secured. Not in many years has there been such a leasing campaign in the old producing areas and on the outer edges as there is at this time.

Lima Field

The best of the late completions in the old Lima Field of northwestern Ohio, was that of the Oko Oil & Gas Co. in its No. 5, located 900 feet from the south line and 750 feet from the east line of the George DeVerna farm, in the southeast quarter of Section 29, Perrysburg Township, Wood County, and between Toledo and Bowling Green. This well struck top of sand at 1,241 feet and drilled 38 feet in the sand, with a flush production of 40 bbls. This is the best completion made in that area for many months. This lease was recently purchased by the Oko company, with headquarters at Lima, the home of its president, Mack P. Colt.

The well of Lantz, Schultz and others on the H. C. Michaels, Section 26, Lake Township, Wood County, and just south of Toledo, located in an area that has been considered of no value for oil for many years, is a strong 100-bbl. producer and will bring about a considerable amount of new development work in that township. The well is about a mile south of the town of Latcha.

Shelby County, a really new addition to the old Trenton Rock producing area, and to the south of the Lima Field, is attracting more attention the past few days due to the wildcat drilled by L. T. McGrath, in the southeast corner of the Henry Ernest farm, in the southeast quarter of Section 9, McLean Township. The top of the Trenton was tapped at 1,269 feet and the drill sent to a depth of 35 feet in the sand, where the pay was found, the well producing 20 bbls. No. 2, same lease, is starting.

A dry hole was encountered by the Vossler Oil Co. in a test 400 feet from the south line and 600 feet from the east line of the Fred Koch farm, in the northwest quarter of Section 16, Douchouquet Township, Auglaize County, at a depth of 25 feet in the sand, where salt water came in quantity. Total depth of the hole was 1,243 feet. In the same section, the same company's No. 4 well, 1,100 feet from the south line and 500 feet from the west line of the C. Vossler, struck top of sand at 1,239 feet and at 33 feet in the sand found a 2-bbl. pumper. The Bachelor Oil Co.'s No. 9 well, 900 feet from the south line and 250 feet from the east line of the W. T. Seibert, Section 7, Salem Township, Auglaize County, pumped 20 bbls. Top of Trenton at 1,140 feet and total depth 1,185 feet, or 45 feet in the sand.

In the Tiffin Field, in Liberty Township, Seneca County, J. H. Murphy and son drilled in No. 6 in the northeast corner of the Leister & Tilliston farm, in the northeast quarter of Section 29, which proved a duster at a total depth of 1,490 feet, or 133 feet in the sand.

The Independent Torpedo Co. of Findlay, Ohio, has invaded the new field at Saginaw, Mich., where H. L. McMillan, the shooter, is making his headquarters at the Sherman House.

The Payne Field of Paulding County has been quiet during the past four months, but word from there is that several strings will soon start active development in both the oil and gas areas close to the town of Payne.

To Lay Pipe Line

Officials of the Buckeye Pipe Line Co. state that an 18-mile line from the Roundhead Field, in Hardin County, to a point where lines are already constructed will be put in as soon as the right of way has been secured, to facilitate production in the growing Roundhead Field. Surveying has been started and engineers are busy making the necessary plans. The line will be of 3-inch, and will be directly connected with the large storage tanks at the Adgate pump station, a couple of miles to the south of Lima. The Hardin County fields are reported to have a monthly production of close to 5,000 bbls., and as there is to be a heavy drilling campaign in the county, there will be quite an increase in production as the wells maintain their production above the average fields of the Trenton area.

Indiana Field

The finding of a 33-bbl. producer by Claud Chandler and others in a test in the southeast corner of the Miley-Chandler farm, in the northeast quarter of Section 14, Logan Township, Pike County, in the southwestern portion of Indiana, may open the way for additional drilling, as it is a slight extension to production. Top of sand was hit at 1,368 feet and the oil encountered at 48 feet in the sand.

Bell Brothers drilled a dry hole in a wildcat 400 feet from the south line and 600 feet from the east line of the Lula P. Harvey farm, in the southeast quarter of Section 15, White River Township, Gibson County, between the Princeton Field of Indiana and the Wabash County, Illinois, Field. The well went to a depth of 1,935 feet, where it was given up and abandoned.

It is announced that Ralph Lingenfelder of Lawrenceville, Ill., and several associates have leased a block of 4,000 acres to the northeast of Loogootee, in Martin County, Indiana, and are making preparations to test the territory. Production has been found in wells drilled both to the north and south of the tract. Some over 20 years ago a few tests were drilled in the vicinity of Loogootee, and had a fairly good showing of oil, but the bringing in of real commercial wells in the Princeton district attracted attention away from the Martin County prospects.

The Democrat of Princeton, Ind., says "George Harbinson and Margaret D. Harbinson have filed suit in Circuit Court against Perry Tichenor and others, asking $3,000 damages to land owned by the plaintiffs as the result of the operation of an oil well by the defendants on the land owned by the W. C. Reavis heirs. The plaintiffs charge that as the result of the pumping, a large amount of salt water is permitted by the defendants to flow over the plaintiff's land which destroys the productiveness of the soil. Plaintiffs also ask for a court order restraining the defendants from pumping salt water onto their lands."

Eastern Indiana

Just at present there are prospects of quite a drilling campaign in the old Trenton Rock area of eastern-central Indiana, especially in the Berne Field of Jefferson Township, Adams County, near the Indiana-Ohio state line. This activity will spread to Blue Creek, Monroe and Wabash Townships, of the same county.

In the early development of the Berne Field, from 1891 to 1906, many wells with flush production from 50 to 1,000 bbls. were uncovered and it was one of the best of the old fields of the state. A few years later when the gusher fields of Oklahoma were being discovered numerous operators left the Hoosier State to make their trys in the Mid-Continent. Oil was cheap, and many a well doing 10 bbls. daily was abandoned and the material shipped to the new western eldorado.

Last fall George S. Lacknett, a well-known operator of Pittsburgh, Pa., purchased the Johnson lease in Section 4, Jefferson Township, Adams County, with one old well and at once drilled in four new ones in rapid succession, all far above the average Trenton Rock producer. Mr. Lacknett is now starting a new well on the Tinkham 80 acres, Section 34, Blue Creek Township.

In Jefferson Township, Adams County, wire report is that J. H. Harmon and others of Mansfield, Ohio, drilled in their No. 4 on the Mary J. Niblick farm of 242 acres in Section 5, which is credited with a flush of 75 bbls. from a depth of 1,121 feet. After giving it a shot it put 63 inches of oil in a 100-bbl. tank through a 2,100-foot lead line, and if pumped off might have gone to the 100-bbl. mark. No. 5 is being started on the same lease. When wells of this size can be encountered at a depth of around 1,100 feet it would seem that a real drilling campaign would be started. The lease on the Niblick farm, with three wells, was purchased by Mr. Harmon and associates some several months ago, the wells were cleaned out and their power and engine completely rebuilt.

Minneapolis parties headed by Robert S. Anderson are drilling a test on the Christ Stengle 90 acres, Section 30, Monroe Township, Adams County. It is rumored this concern is considering the trying out of a rotary outfit in their territory located in what is known as the Lobb, where 400 feet of drive pipe is required.

Schulte, Haney and others have two nice wells on the Runyon farm, Section 16, Blue Creek Township, Adams County, and are now drilling No. 3. These parties recently purchased the farm in fee simple with the royalty interest.

(Continued on Page 116)

KENTUCKY-TENNESSEE STATE LINE COUNTIES ATTRACTING OPERATORS

SCOTTSVILLE, Ky., May 17.—The completion of a 1,700,000-foot gas well on the Treadway farm, in Lee-Owsley Counties; a 30-bbl. well on the White farm, in the Knob Road district of Barren County; another for 25 bbls. on the Steffey lease, in the Emery-Moore Pool, same county, were the leading wells as far as production was concerned. The inability to bring in any new wells in the rich Hopewell Pool, of Cumberland-Adair Counties, nor in the Willow Grove or Clark pools, in Clay County, Tennessee, brings the week's flush to a point below the previous report.

The Owensboro district in the western division is showing renewed activity since the roads have become passable. This also applies to most of the fields throughout both states. Plans are being perfected for a big development along the Cumberland-Adair line in the central southern portion of the field, while activity will be shown in the southern portion of Cumberland and Monroe Counties of Kentucky and in Clay, Jackson, Overton and Scott Counties of Tennessee. A flock of oil scouts and operators is invading the counties along the State line between Kentucky and Tennessee, mostly from the southwest fields of Louisiana and Texas, although eastern operators are getting a foothold. The shallow drilling appeals to them, although the wells cost as much as in some of the fields where wells are double the depth, on account of the cost of moving in materials. The only drawback at this time to the Clark and Willow Grove pools, in Clay County, Tennessee, is the inability to market the crude, there being no pipe line facilities and the same thing prevails in the New Hopewell Pool of northern Cumberland and southern Adair Counties in Kentucky, but plans are working for the connecting up of both the Clark and Willow Grove pools, in Clay County, Tennessee, as the Paragon Development Co. line is only about 7 miles away and this company has lines extending into the former pools of Cumberland County and will no doubt eventually connect up these areas. There is some talk of Louisiana parties putting a line into the Hopewell Pool, but there is nothing definite at this time.

With the Clark Pool of Clay County, Tennessee, but 7 miles away from the Kettle Creek Field of Cumberland-Monroe Counties, Kentucky, practically all the territory between the two fields has been leased and much wildcatting will be done in an effort to connect the two areas. There is also going to be a number of ventures made between the Clark Pool and the good wells found by the Carnahan Oil Co. and Alexander in the vicinity of Willow Grove, to the east of the productive Clark Pool, where close to 5,000 bbls. of crude is now in storage awaiting pipe line connection.

In the eastern division work is lagging but operators are now getting set after a very severe winter and a great amount of work should be started soon.

Week's Work

A brief of the week's work in the Blue Grass State shows 23 completions with 15 producers and a flush of 151 bbls. Compared with the previous week, this shows 7 more completions, 3 more pro-

(Continued on Page 172)

NEW CUSTOMERS BECOME PERMANENT ONES

Another Big Cooper for Magnolia Gas

Two years ago the Magnolia Gas Company installed five Cooper 1000 B.H.P. gas engines direct driving Cooper compressors in their Latex station on the line between Texas and Louisiana. At the same time they built a duplicate station with Cooper engines near Bethany, Louisiana. This station is pictured above. They are now installing an additional Cooper 1000 B.H.P. engine direct driving Cooper compressors in this station.

There is no greater indication of the merit of Cooper Gas Engines and Cooper Business Policies than that once they try Coopers they so seldom change.

Another large gas company ordered their first seven Cooper engines for a new station last week.

The C. & G. Cooper Company
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Los Angeles

504 Kennedy Bldg., Tulsa
Kirby Bldg., Dallas

S ENGINES

OUR INTEREST IN A COOPER ENGINE NEVER DIES

West Virginia Best Prospect in East

Hope of Finding New Production in the Lower Counties, Possibly a New Pool in Harvey District, Mingo County

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., May 17.—In the desire for strictly new producing territory, those who are inclined to drill wildcats are at a loss to know where is the most likely place to try. So much territory has been tested and found barren that only a few localities remain that have not been fully tested. It is quite certain that the southwest Pennsylvania fields have nothing to offer and southeastern Ohio in much the same condition. A few of the lower counties in West Virginia have not been so closely tested as to preclude the possibility of presenting a new pool. All of the new discoveries in this State within the past decade are the new Big Injun Sand Pool in Henry district, Clay County, the salt sand development in Scott district, Putnam County, and the possible chance of extending the shallow sand pool in Harvey district, Mingo County. None of these has yet reached 1,000 bbls. a day. The new pool in Clay County is making the best showing and has not been defined and looks the most promising.

The Big Injun sand development in Henry District, West Virginia, is furnishing completions with a good deal of regularity. The Virginian Gasoline & Oil Co. has completed and shot in the Big Injun Sand No. 6, on the Brown, Swan, Goshorn and Sennett lease, good for 30 bbls. a day; the rigs for Nos. 7, 8 and 9 on this lease have been completed. The same company has the rig up for No. 10 on the Swan, Goshorn and Geary tract. The same company is drilling No. 12, and has the rig up for No. 13 on the J. B. Casto 260 acres.

In the same district, the South Penn Oil Co. has completed in the Big Injun sand No. 3 on the Joseph Belcher farm good for 35 bbls. a day. The location is 650 feet east of the company's first test on this farm. In Reedy district, Roane County, the Heck Oil Co. has completed a test on the Pierce Dix farm. It is good for 100,000 feet of gas and showing a little oil. The location is 1,000 feet southwest of the same company's test on the Thomas Brown farm. In Union district, Clay County, the Empire Petroleum Co. has the rig completed for a second test on the J. M. Young farm.

Still Fishing at Deep Test

In Union district, Harrison County, the Reserve Gas Co. is still fishing for casing at its deep test on the Smith Brothers' farm. Before the casing parted, and the fishing job ensued, they had reached a depth of 6,220 feet. In the same district, the Hope Natural Gas Co. has a gasser in the Speechley sand on the J. W. Somerville farm, at a total depth of 3,148 feet. In Clark district, the Hope Construction & Refining Co. is due in the sand at No. 4, on the Marshall Martin farm. In Coal district, S. L. Horner has shut down at 2,267 feet on the Edward Titroe farm. In Grant district, the Grasselli Chemical Co. has shut down at the same depth on the Mary E. Norman farm. In Collins Settlement district, Lewis County, the Duncan Oil & Gas Co. is due in the sand at a test on the H. H. and E. E. Duncan farm. In the same district, the Petroleum Star Co. and Cayton have a rig up on the Grace Rhodes farm. C. W. McCall & Co. are drilling a test on the J. A. Carothers farm. In Courthouse district, Roy R. Horner is due in the Gordon sand at a test on the Mary V. Horner farm.

In Carroll district, Lincoln County, the Ray Gas Co. has started to drill on the T. H. and W. R. Lockwood farm. In Barboursville district, Cabell County, Ortman & Shipe are building a rig on the Joseph Merritt heirs' farm. In West Union district, Doddridge County, C. H. Pigott is due in the Keener sand at No. 4, on the Benjamin F. Hefflin farm. In Carroll district, Lincoln County, the Transylvania Petroleum Co. is due in the Big Injun sand on the Bird Maddox farm.

In Henry district, Clay County, the South Penn Oil Co. has drilled a second test on the Joseph Belcher farm into a formation below the salt sand. It is a gasser and they are undecided as to drilling it deeper at this time. This is the second gasser the South Penn Oil Co. has brought in during the past two weeks. In Lafayette district, Pleasants County, Smith & McCullough's No. 4, on the J. H. Fleming farm, an old well drilled down, is dry in the Big Injun sand. It will be good for about 3 bbls. a day in the Maxon sand.

Ritchie County

In Grant district, Ritchie County, the Hope Natural Gas Co.'s test on the B. F. Phillips farm is a gasser in the Maxon sand. In Union district, the same company's second test on the Lonnie Bee farm is a gasser in the Big Injun sand. In Harvey district, Mingo County, A. B. McGrew, Jr., has drilled No. 16 on the Costerman estate into the sand and reported it showing for a producer.

In Union district, Clay County, the Chalmers Oil & Gas Co. has completed in the Big Injun sand a test on the Samuel Samples farm. It is on Elk River and is a gasser good for 200,000 feet of gas. In the same district, the Empire Petroleum Co. is due in the sand at a test on the J. H. Samples farm.

Kanawha County

On Poca Fork, Elk district, Kanawha County, 840 feet north of the South Penn Oil Co.'s test on the Sarah S. Dodd farm, the United Fuel Gas Co. completed in the Big Injun sand a test on the C. Halstead farm. It is a gasser good for 340,000 feet of gas. On Cooper Creek, same district, the same county, has completed a test on the William Gibson farm. It is a duster. The location is 3,000 feet southeast of the same company's test on the Grant Copenhaver farm.

Putnam County

In the salt sand development on Poplar Fork, Scott district, Putnam County, 300 feet northeast of the Charleston-Dunbar Gas Co.'s test on the Gabe Smith farm, the Nichols Oil & Gas Co. has a 3-bbl. pumper in the salt sand at a test on the John Murray heirs' farm. On the same stream, and same county, the Teays Producing Co. is drilling another test on the Fannie J. Simms farm. In the same locality, Kirtley & Kirtley are drilling a second test on the Fannie J. Simms farm.

Southeastern Ohio

The deep sand territory in southeastern Ohio, after a run of light pumpers, has come to the front with two fair producers. In Section 8, Hanover Township, Licking County, the Edward H. Everett Co. has completed and shot in the Clinton sand No. 6 on the Felix Montgomery farm. The well produced 125 bbls. the first 24 hours. In the southwest quarter of Section 15, Perry Township, Coshocton County, the Preston Oil Co. completed and shot in the same formation a second test on the E. Ray and Otto M. Van Winkle farm. It produced 100 bbls. the first 24 hours.

Shallow Completions

In the Fisher Pool, Section 24, Athens County, Cook and others have completed and shot in the Berea grit a test on the W. E. Bossen farm. It is a very light pumper. In the same pool, in Lot 95, Townshen and others completed a test on the Effie Watkins farm. It is dry and has been abandoned.

In the southeast quarter of Section 11, Franklin Township, Monroe County, Ray Slack & Co. have completed No. 4 on the Herman C. Baker farm through the Squaw sand and dry. However, it will make a light pumper from the Big Lime formation. In Section 20, Lawrence Township, Washington County, J. E. Patterson has completed No. 6 on the Bergen Oil Co.'s lease, good for 15 bbls. a day in the Big Injun sand.

The Big Ten Oil & Gas Co. completed its No. 2 on the Hazelton heirs farm in Section 28, Coal Township, Perry County, Ohio, and the well produced 65 bbls. the first 24 hours after being shot. It was completed in the Clinton sand at a depth of 3,300 feet.

The East Ohio Gas Co. completed its No. 2 on the Harvey Bell farm, in Lot 29, Hardy Township, Holmes County, Ohio, and after a shot produced 90 bbls. the first 24 hours.

Ohio Oil & Gas Co. has completed and shot its No. 5 on the F. R. Baker farm, in the Fisher Pool, Section 23, Alexander Township, Athens County, Ohio, and it will make a 3-bbl. well. It was completed in the Grit sand at a depth of 1,135 feet.

Empire Gas & Fuel Co. has completed No. 2 on the Uhler S. Davenport farm, Lot 4, Monroe Township, Holmes County, Ohio, in the Clinton sand, good for 750,000 feet of gas.

Leonard Oil & Gas Co. has a 10-bbl. well after a shot in the Berea sand at a depth of 754 feet. It is on the J. W. Myers 80 acres, Section 22, Fallsburg Township, Licking County, Ohio.

E. J. Edmonds and others completed No. 8 on the Ellen E. Forry farm, Section 24, Newton Township, Licking County, Ohio, and after a shot will make a 6-bbl. well from the Berea sand.

Southeast Ohio Tests

In some sections of the southeastern Ohio fields there is considerable test work under way and starting in the old districts. In Section 21, Harrison Township, Perry County, the Standard Hocking Coal Co. is due in the Clinton sand at a second test on its own property. In Section 13, Washington Township, Hocking County, the Thrush Oil Co. has a rig up on the Emily Thrush farm. In Green Township, Section 23, the Jewel Oil & Gas Co. is moving the rig to its location on the P. R. Blair farm. In Section 24, same township, the Fellowship Oil & Gas Co. has a rig completed on the T. J. Mowry farm.

Holmes County

In the deep sand territory, Holmes County is leading all others in completed and new work starting. In Section 23, Killbuck Township, the Ohio Oil Co. is due in the sand at a test on the Ellsworth Middaugh farm. In Section 19, the same company is drilling a second test on the Rachel Mohr farm. In Section 13, the Leonard Oil & Gas Co. has a rig up on the Byron Middaugh farm. In Section 15, Monroe Township, the Ohio Fuel Gas Co. has a rig up on the Elizabeth Romsbacher farm. In Section 15, Hardy Township, the East Ohio Gas Co. is due in the sand at a test on the Christian Schlarb farm. In Section 5, the Empire Gas & Fuel Co. has the rig completed for a second test on the Delpha Netherow farm. It is drilling a second test on the Mary E. Bridges farm.

Guernsey County

In Section 21, Adams Township, Guernsey County, the Big Lime Oil Co. has started to drill on the William Knight farm. In Cambridge Township, T. A. Matthews has a rig up on the Marshall Gibson farm. In Westland Township, Stoltz and others have a rig up on the H. W. Fulton farm. The Empire Fuel Gas Co. is the most active in this county. It has rigs up on the J. C. Archer, Albert Woodburn and W. L. Ford farms. The same company is drilling at tests on the C. O. Watson, Lola Shrum and W. C. Morrison farms. Locations have been made for tests on the Riley Moore, Anna M. Jerels and George Bell farms. The Ohio Oil Co. has a rig up on the Alice B. Mahaffey farm.

The southwest Pennsylvania fields had but few completions. In Ohio Township, Beaver County, Reed & Co. got what looks to be a 12-bbl. pumper when it

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MICHIGAN WILDCAT NEAR PORT HURON MAY PROVE COMMERCIAL PRODUCER

By Whit

PORT HURON, Mich., May 17.—The bringing in of a purely wildcat venture by the Sanilac-St. Clair Prospecting Co. near the town of Blaine, approximately 15 miles north and a little west of Port Huron, in St. Clair County, on the Pere Marquette Railroad between Port Huron and Bad Axe, has brought about another oil excitement in the extreme eastern portion of Michigan. The value of the well is yet unknown on account of the heavy volume of salt water encountered and which will have to be exhausted to a great extent before any facts can be given as to the oil production. The well has only been pumped a day or so on account of not having tankage and putting their pumping equipment in condition. It has all the earmarks of a commerical producer and J. A. Smethers, of Warren, Ind., the contractor estimates it from 10 to 15 bbls. The well has been under the supervision of Tom Burnell, a native of Blaine. The company is a local one formed for the purpose of testing out the areas around Blaine, which is located but a short distance inland from Lake Huron.

The well was drilled with a machine. Top of sand was encountered at 1,250 feet and at 1,263 feet the oil showing was found and the pay entered only 2 feet to a total depth of 1,265 feet, as for fear of finding another water sand it was stopped at that depth. There appears to be sufficient gas to supply for pumping power for the well and possibly for drilling purposes.

The gravity of the oil is good but the formation in which it was found has not been determined, possibly the Helderberg which lies between the Oriskany and Salina.

The hole contains 265 feet of 8-inch casing and about 1,200 feet of 6¼-inch. This casing is hung on a bottom hole packer. Contractor Smethers announces that the next well drilled that they will use 265 feet of 10-inch casing and about 800 feet of 8-inch and set the casing just above the sand. He claims they got a

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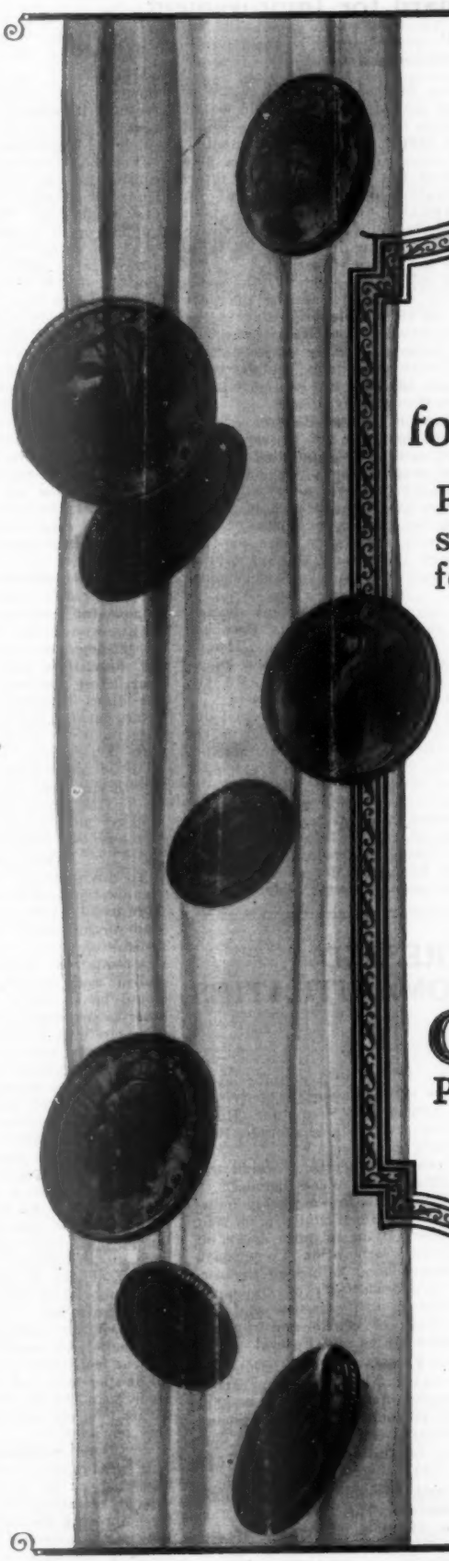

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Changes Needed in Gas Association

State Organizations, Affiliation or Larger Organization, Solutions Offered By A. W. Leonard for Improvement

By A. W. Leonard*
Retiring President, Natural Gas Association of America

It is particularly appropriate, I believe, that the coming-of-age convention of the gas association should be held in Tulsa, for this growing organization and this young city are about the same age—just reaching the stage of legal maturity. Likewise it is proper that the natural gas men of the nation should gather in the metropolis of what has become the greatest gas producing state of the United States.

Oklahoma, as you know, advanced to first place among the gas producing states of the Union in 1924—the last year for which complete official figures have been compiled. The Oklahoma production was placed at 214,452,000,000 cubic feet. California was not far behind Oklahoma with 189,692,000,000 cubic feet and West Virginia was third with 182,285,000,000 cubic feet. Louisiana and Texas, two other of our southwestern states, were fourth and fifth respectively. Then came Ohio and Wyoming. Our neighboring states of Arkansas and Kansas were eighth and ninth respectively. Although Oklahoma was first in production, it was out-ranked by California in consumption, California's figure having been 189,692,000,000 cubic feet and Oklahoma's, 183,451,000,000 cubic feet. The difference between Oklahoma's production and consumption represented gas transported into Texas, Kansas, Missouri and Arkansas.

Past Year's Work

Let us review briefly the past year's work of the Natural Gas Association of America, and on this, our twenty-first anniversary, take stock of ourselves and endeavor to determine whether or not, we are pursuing policies which mean constructive accomplishments and progress, valuable alike to the entire industry, to the consumers of our product, and to the individuals who are members of our organization.

From the general offices of the association in Pittsburgh there have been sent out since our last convention 10 bulletins covering papers, rate decisions and other topics of interest to the natural gas industry.

Rate information has been sent out at regular intervals, and the files on rates are as nearly up-to-date as it is possible to keep them. Guy Batchelor, our secretary, desires the co-operation of all the companies in the association in this as well as in other phases of the work, in order that the association's information files may contain the latest and most authentic rate information available. There have been many requests for rate information from all parts of the United States during the year.

Technical and research committees have been active throughout the year. Under the direction of the gas measurement committee—orifice meter holder calibration tests were conducted in September and October, 1925, at the Number 2 works of the East Ohio Gas Co., at Cleveland. These tests were in conjunction with the United States Bureau of Standards. The committee held session at Pittsburgh on December 16, 1925, and on January 19, 1926, to discuss the results of these tests. Additional tests will be held at Buffalo in June. A more or less detailed report on the progress of this work, however, will be presented at this convention by the committee itself, and I am referring to it only as an example of the work that is being done by the various branches of the association.

Work With Other Associations

During the year there has been active co-operation with other associations, particularly the American Gas Association and the American Petroleum Institute. We have contributed $2,500 to the American Gas Association to be used in the 1926 work of the appliance testing laboratory at Cleveland. We have worked with the American Petroleum Institute on their standardization program, having representatives on the committees.

Likewise we have been in active co-operation with the United States Bureau of Mines and the Bureau of Standards. The work of handling problems of losses in main transmission lines has been carried on with the Bureau of Mines, at Bartlesville, Okla. In Pittsburgh we have been co-operating with the bureau through the circulation of the motion picture, "The Story of Natural Gas."

The association has worked with the Bureau of Standards in various ways, and both the Bureau of Standards and the Bureau of Mines are actively represented on various subcommittees of the Technical Research Committee. We, also, are represented on the Gas Testing Committee of the Association of Natural Gasoline Manufacturers.

The offices of the association during the year have received many and varied requests for information. The requests covered such subjects as meter connections, meter housings, state regulations, house piping, stenches in gas, and storage of natural gas. Requests likewise have been numerous for papers on leakage and natural gas burners. These requests have come from scientists and schoolgirls, from gas men in the office and in the field, and in all cases the association has endeavored to provide the very best information obtainable. There were more than 300 separate requests for information, according to Mr. Batchelor.

Information on File

At the office of our general secretary the latest information obtainable, in regard to our industry, is kept on file and it is there for your convenience. Why not make use of it? We could be of more service to each of you if you would keep this branch of our service in mind.

The Natural Gas Magazine under able management has been a source of interest, inspiration and education to us all. The "Wrinkles" department has been proving useful in encouraging inventive effort and in giving the results of those efforts to the entire industry.

In the matter of publicity, the association has been active during the year endeavoring to continuously educate the public regarding the problems of the natural gas industry. These subjects, however, will be covered more completely in the reports of the various committees that have the work in charge.

And now as to the future. Every natural gas man in the United States must keep continuously in mind the necessity of keeping the public informed The natural gas business, as we all know, differs from any other branch of public utility service, in that its source of supply is erratic, and when once used is gone forever. We know this, of course, but must continue to tell the consumers of it.

There is no more important department of gas company activity than advertising and public relations. If our consumers get to knowing us and knowing our problems, finding that we are all human beings, intent primarily in providing them with an adequate and uninterrupted service, and desiring to receive for that service only an amount sufficient to give a reasonable return on the money invested, then there will be less of this talk of "soulless corporations"—and "vested interests." The public is fair-minded if rightly informed—and we must see that it is truthfully informed instead of having to depend for its information upon sources which, either innocently or selfishly, do not give out truthful information regarding our business.

Improving Appliances

For the protection of ourselves and our consumers, the association should continue its efforts to raise the standard of gas appliances. Manufacturers of gas appliances as a general rule have been quick to realize that it is to their own advantage as well as that of the natural gas industry to put out appliances of the most efficient type possible. We should recommend only those appliances which we know to be efficient, and we should not pursue a half-hearted policy with regard to appliances, the purchase of which by a consumer will result only in dissatisfaction, gas waste or possibly even danger to life or health.

Now, let us consider our organization itself. We believe in the Natural Gas Association of America, and we believe that it can be an institution of great services to the industry—but something is wrong; improvements must be made; our organization must be made more valuable.

If we are all firm in the belief that the Natural Gas Association of America is a useful organization, that is capable of an even larger field of benefit both to consumers and the natural gas industry; that it is really worth the cost in time, effort and money, then let us make our plans toward its improvement and enlargement. But if, on the other hand, it is the view of the majority, after mature deliberation, that our association as it is today constituted is not giving the service that is reasonably expected of it; that it is not beneficial to the industry as a whole; we should then discontinue our organization.

Three Solutions

To this there are three solutions: State organizations, affiliation, or a larger and more useful natural gas association. With state organizations we could derive the benefits of closer co-operation and larger representation. Laboratories could be installed and committees appointed who would be in closer touch with one another to investigate the problems peculiar to their own territories. The various companies within the state would have for their immediate use such information as would be especially beneficial to their operation in their particular state. And in place of the Natural Gas convention, an annual meeting of the executives of the various state organizations would be of great assistance to the industry.

Secondly, could a greater good be accomplished for all concerned by affiliating with some other association of similar purpose? The benefits gained from such an affiliation would be many. Personally, I am a great believer in one large association with an efficient working organization.

But, if we sincerely believe that we can make our organization, as it is at present constituted, larger and more useful in the next few years than we have made it in the 21 years of its existence, let us put our shoulders to the "wheel" and get busy.

Need Southwest Secretary

If we intend to continue the Natural Gas Association of America as a separate organization, then let us seek means for improving its value. Let us get action on the proposed Southwestern secretaryship and plan to bring the gas men in this state and the adjoining states of Kansas, Texas, Louisiana and Arkansas, more firmly into the national association. These states have methods of handling gas production, transmission and distribution that are peculiar to this territory. We hope some of them are new

(Continued on Page 126)

*Before Natural Gas Association of America, Tulsa.

ASSOCIATION SERVICE STRESSED BY MANAGER OKLAHOMA UTILITIES

By E. F. McKay*
Manager, Oklahoma Utilities Corporation

It is appropriate that a natural gas convention be held in Oklahoma when it is considered that this State depends upon natural gas for 100 per cent of its gas service. Oklahoma being the only State in the Union wholly without manufactured gas. Oklahoma has 77 counties and natural gas is produced or distributed in two-thirds of them.

"Association service" in Oklahoma has been and is valuable because of the spirit of co-operation, already credited with what has been accomplished in Oklahoma in all directions. Prior to 1918, there were separate organizations in the various branches of the utility industry. In that year leaders in the several organizations decided that they could accomplish more by pooling their efforts and their resources and the Oklahoma Utilities Association came into existence. It is controlled by an executive board consisting of representatives of the various branches of industry, one member from each division being elected each year for a 3-year term. Its membership includes all the larger companies in all divisions and is rapidly moving toward the point of saturation numerically.

The organization in Oklahoma differs from that in most states in the fact that all activities in which the utilities have a common interest are cleared through one office. Public utility information work is one of our important activities. Speakers' bureau work is another. Rural electrification promotion is another. Educational work is another.

Going into some detail, I would say that our Information Work includes:

(a) Judicial Bulletin—A weekly bulletin, called the Judicial Bulletin, is sent to all members giving advance docket of the Oklahoma Corporation Commission for two weeks, latest rulings of the corporation commission and of Oklahoma courts touching utility issues, and important rulings of courts and commissions of other states and Federal.

(b) News Letter—The association also issues a weekly News Letter to about 300 newspapers of Oklahoma. It reaches each of the 77 counties of the State and all the principal cities and towns. This publication is restricted absolutely to legitimate news of general interest.

(c) Transmitter-Southwestern Public Service Journal—The association furnishes approximately 50 per cent of the copy for the Transmitter-Journal, a monthly magazine issued at Fort Worth, Tex. The association manager and certain assistants are designated as members of the editorial staff of this magazine. This magazine is the official organ of the Oklahoma Utilities Association; Southwestern Public Service Association

(Continued on Page 176)

*Before Natural Gas Association of America, Tulsa, Okla.

NATURAL GAS DEVELOPMENTS

Service to Users Is Now the Slogan Of the Gas Industry

Service to customers—it's the antithesis of the code of another day fast fading into the mist of Things We've Outgrown.

That old code ranged all the way from "Skin 'em While the Skinnin's Good," at its worst, to "See That We Don't Lose Anything, No Matter What Happens to the Other Fellow," at its best.

In the business of retailing natural gas and the equipment for its use this service to customers represents the viewpoint that no commercial success can endure unless it is built on the solid foundation of friendly relationship with the consumer—a friendly relationship established by frank understanding, an attitude of helpfulness and recognition of the fact that the gas company's obligation does not end with the signing of a contract stipulating that the customer shall pay a certain price for his gas and pay it before a certain date each month.

Service to customers, while varying in its character according to the ideas and theories held by directing heads of gas companies, usually includes the visits of an inspector who goes from house to house in the company's district and makes a careful examination of the piping, meter and appliances. He notes the design of these appliances, their adjustment and the method of their use, or as happens in some cases, their abuse.

Inspection Service

The inspector points out any improvements that might be made. A large percentage of gas users lack the technical knowledge that would enable them to obtain the best results from their appliances. In such cases the inspector shows the customer how to operate the devices and how to adjust them to conform to varying conditions.

Perhaps no one detail in the proper use of natural gas in the kitchen is more generally misunderstood than that of effecting the right admixture of air with the gas. Waste of gas results from ignorance in this particular, not to mention the layers of soot that mysteriously adhere to cooking utensils.

Sometimes the piping is too small for adequate service. Perhaps the wrong type of burners is being employed. Maybe the burners are all right, but set too low. The inspector recommends such changes as he regards as advisable.

In this connection it should be noted as an evidence of high business ethics, although not of zeal to fatten sales records, that information obtained by these inspectors concerning the needs in homes visited by them is carefully guarded.

Most of the large gas companies maintain merchandising departments for the sale of all kinds of gas appliances. It would be a simple matter, and in the eyes of many persons a wholly legitimate one, for the inspector to impart to the appliance sales department the fact that Mrs. Jones of B Street, needs a new kitchen range and is in a mood to get one. But the inspector does no such thing. If Mrs. Jones decides to get a new range, it will not be under the spell of a persuasive talk by a gas company salesman. And she will make her own free choice among those on the market.

This policy helps wonderfully in establishing good will and confidence.

Testing Laboratories

As an important feature of their service departments many companies maintain testing laboratories. Here are examined by experts and subjected to rigid tests all manner of devices intended for use in the consumption of natural gas. These devices are tested first for safety; second, for their practical utility; third, for durability, and last for economy. No matter how convenient, long-lived and eliminative of waste an invention may promise to be, if it lacks the first prime requisite, safety, it is rejected forthwith.

Devices already on the market and those being developed are made the subjects of tests in these service department laboratories. Sometimes needed aid is given in developing a worthy appliance. Only those applicances that pass the tests of safety, utility, durability and economy receive the stamp of the laboratory's approval.

In the merchandising department of the large modern natural gas company are a wide assortment of applicances which have been approved by the testing laboratory and which are installed under the expert supervision of a gas company employe. These appliances include ranges, laundry stoves, hot plates, water heaters, room heaters, gas furnaces, gas heating boilers (for central house heating), garage heaters, ironing machines, clothes dryers, garbage incinerators and a vast number of commercial appliances and industrial ovens and furnaces.

In connection with the sale of many of these appliances and their auxiliary equipment the service department of a modern gas company conducts demonstrations. The demonstrations, of course, for the most part have to do with appliances for use in the home, especially those used in cooking.

Demonstration Room

A typical demonstration room has among other things a burner rack, to which are attached various types of burners, with a pressure regulation and a sensitive meter which shows on a dial the amount of gas consumed under proper regulation as compared with the amount used under improper regulation.

Then there are shown side by side an old-style, solid-top range, in which the flame is kept covered, and a modern open-grid range, in which the flame comes in direct contact with the cooking utensil. Here is shown before the gaze of the visitor how the old-style range takes twice as long to bring water to the boiling point as the modern range and consumes twice as much gas in the process.

In the demonstration of appliances for the kitchen, etc., women almost invariably are employed. These women are experts in the field of gas utilization and skilled

(Continued on Page 172)

NATURAL GAS CONSUMPTION IN 1924 AT NEW RECORD STATISTICS SHOW

By G. B. Richardson and H. Backus*

In 1924 the natural gas industry in the United States made another high record by the consumption of 1,141,482,000,000 feet, which had an estimated value of $105,779,000 at the wells and of $253,830,000 at points of consumption. This total is 13 per cent more than the consumption in 1923 and almost double that of 1914.

Increased production, as measured by deliveries to consumers, is recorded for most of the states and in California, Louisiana and Texas the gains range between 58,000,000,000 and 33,000,000,000 feet; but on the other hand a smaller output than in 1923 is reported from West Virginia, Pennsylvania, Ohio and Montana. West Virginia passed from first place in quantity of gas produced, a rank it had held since 1909, to third place, and Pennsylvania receded from fourth to sixth place. These changes mark the passing supremacy of the eastern states in the production of natural gas and a closer approach in rank of the states producing natural gas to those that produce petroleum, and they emphasize the increasing use of casinghead gas—the gas obtained from oil wells.

The ratio of the domestic to the total consumption of natural gas continued to decrease and in 1924 only 25 per cent of the total quantity was used for domestic purposes as contrasted with 28 per cent in 1923, with 33 per cent in 1922, and with

(Continued on Page 138)

*United States Bureau of Mines.

NATURAL GAS PRODUCED AND CONSUMED IN THE UNITED STATES, 1924

State—	Produced and delivered to consumers, including deliveries in other states: Quantity, M cubic feet	Quantity, Per cent of total	Estimated value at the wells, Total	Aver. per M cu.ft. (cents)	Value at points of consumption, Total	Aver. per M cu.ft. (cents)	Consumed, including receipts from other states: Quantity, M cubic feet	Quantity, Per cent of total	Value at points of consumption, Total	Aver. per M cu.ft. (cents)
Arkansas	26,616,000	2.3	1,747,000	4.8	4,908,000	13.4	44,595,000	3.9	5,977,000	13.4
California	189,692,000	16.6	14,227,000	7.5	35,949,000	19.0	189,692,000	16.6	35,949,000	19.0
Colorado	47,600	*	1,700	3.6	1,700	3.6	47,600	*	1,700	3.6
Illinois	4,072,000	.4	635,000	15.6	759,000	18.6	4,072,000	.4	759,000	18.6
Indiana	998,000	.1	357,190	35.8	494,000	49.5	2,277,000	.2	1,278,000	53.8
Kansas	25,580,000	2.2	2,128,000	8.3	10,087,000	39.4	40,528,000	3.5	11,074,000	27.3
Kentucky	12,875,000	1.1	1,147,000	8.9	3,432,000	26.7	21,514,000	1.9	5,841,000	27.1
Louisiana	160,945,000	14.1	5,021,000	3.1	7,626,000	4.7	163,469,000	14.3	6,858,000	4.2
Maryland	.....	...	.....	.....	.....	....	679,000	.1	496,000	73.0
Michigan	600	*	55	9.2	300	50.0	600	*	300	50.0
Missouri	71,000	*	6,525	9.2	61,000	85.9	5,394,000	.5	4,617,000	85.6
Montana	1,071,000	.1	34,350	3.2	272,350	25.4	2,228,000	.2	566,350	25.4
New York	6,196,000	.5	1,853,000	29.9	3,632,000	58.6	16,506,000	1.4	9,685,000	58.7
Ohio	47,396,000	4.2	8,351,000	17.6	24,203,000	51.1	111,353,000	9.8	57,550,000	51.7
Oklahoma	214,452,000	18.8	14,926,000	7.0	31,045,700	14.5	183,451,000	16.1	24,016,700	13.1
Pennsylvania	105,863,000	9.3	25,037,000	23.7	45,546,000	43.0	123,932,000	10.9	52,005,000	42.0
South Dakota	3,000	*	275	9.2	2,500	83.3	3,000	*	2,500	83.3
Tennessee	1,200	*	110	9.2	450	37.5	1,200	*	450	37.5
Texas	107,247,000	9.4	4,065,000	3.8	13,748,000	12.8	107,447,000	9.4	14,914,000	13.9
West Virginia	182,285,000	16.0	24,536,000	13.5	68,000,000	37.3	79,240,000	6.9	18,445,000	23.3
Wyoming	46,036,000	4.0	1,699,000	3.7	4,081,000	8.9	44,879,000	3.9	3,787,000	8.4
Other	73,600	*	6,765	9.2	7,000	9.5	73,600	*	7,000	9.5
Total	1,141,521,000	100.0	105,779,000	9.3	253,856,000	22.2	1,141,482,000	100.0	253,830,000	22.2

*Less than 0.1 per cent.

NATURAL GAS CONSUMED IN THE UNITED STATES, 1924

State—	Domestic: Number of consumers	M cubic feet	Value at points of consumption, Total	Average (cents)	Industrial: Field (drilling, pumping, and operating gasoline recovery plants.) M cu.ft. (estimated)	Value at points of consumption (estimated)	Other industrial, including use in manufacture of carbon black. M cubic feet	Value at points of consumption, Total	Average (cents)	Total industrial: M cubic feet	Value at points of consumption, Total	Average (cents)
Arkansas	44,930	6,346,000	2,744,000	43.2	28,180,000	1,344,000	10,069,000	1,889,000	18.8	38,249,000	3,233,000	8.5
California	591,010	22,480,000	16,619,000	73.9	108,660,000	8,150,000	58,552,000	11,180,000	19.1	167,212,000	19,330,000	11.6
Colorado	9	900	500	55.6	.....	.....	46,700	1,200	2.6	46,700	1,200	2.6
Illinois	10,610	260,000	164,000	63.1	3,812,000	595,000	.....	.....	....	3,812,000	595,000	15.6
Indiana	25,980	1,194,000	729,000	61.1	84,600	30,000	1,098,400	519,000	47.3	1,183,000	549,000	46.4
Kansas	135,420	9,876,000	6,362,000	64.4	5,911,000	492,000	24,741,000	4,220,000	17.1	30,652,000	4,712,000	15.4
Kentucky	129,140	11,230,000	4,590,000	40.9	1,002,000	89,000	9,282,000	1,162,000	12.5	10,284,000	1,251,000	12.2
Louisiana	30,430	4,523,000	1,404,000	31.0	18,073,000	564,000	140,873,000	4,890,000	3.5	158,946,000	5,454,000	3.4
Maryland	11,710	602,000	455,000	75.6	.....	.....	77,000	41,000	53.2	77,000	41,000	53.2
Michigan	7	600	300	50.0	.....	.....	.....	.....	....	.....	.....	.....
Missouri	93,032	4,860,000	4,431,000	91.2	.....	.....	534,000	186,000	34.8	534,000	186,000	34.8
Montana	5,640	1,319,000	540,300	41.0	239,000	7,650	670,000	18,400	2.7	909,000	26,050	2.9
New York	213,790	15,964,000	9,471,000	59.3	306,000	91,000	236,000	123,000	52.1	542,000	214,000	39.5
Ohio	1,065,860	88,269,000	48,301,000	54.7	4,752,000	838,000	18,332,000	8,411,000	45.9	23,084,000	9,249,000	40.1
Oklahoma	150,170	17,184,000	9,115,700	53.0	118,774,000	8,266,600	47,493,000	6,634,400	14.0	166,267,000	14,901,000	9.0
Pennsylvania	568,200	58,896,000	31,732,000	53.9	9,494,000	2,345,000	55,542,000	18,028,000	32.5	65,036,000	20,273,000	31.2
South Dakota	52	3,000	2,500	83.3	.....	.....	.....	.....	....	.....	.....	.....
Tennessee	32	800	400	50.0	400	50	.....	.....	....	400	50	12.5
Texas	196,560	14,708,000	9,067,000	61.6	61,155,000	2,318,000	31,584,000	3,529,000	11.2	92,739,000	5,847,000	6.3
West Virginia	160,210	24,943,000	7,381,000	29.6	12,962,000	1,745,000	41,335,000	9,319,000	22.5	54,297,000	11,064,000	20.4
Wyoming	10,603	2,492,100	965,000	38.7	15,959,000	737,000	22,427,900	2,085,000	9.3	42,386,900	2,822,000	6.7
Other*	5	600	300	50.0	73,000	6,700	.....	.....	....	73,000	6,700	9.2
Total	3,443,400	285,152,000	154,075,000	54.0	393,437,000	27,519,000	462,893,000	72,236,000	15.6	856,330,000	99,751,000	11.6

*Alaska, Iowa and North Dakota.

MEN KNOWN IN OILDOM

R. C. Holmes

R. C. Holmes, president of The Texas Company, was reared in a petroliferous atmosphere, and is thoroughly seasoned by early experiences. During boyhood school vacations he worked in refineries.

Mr. Holmes was born in Sharon, Pa., August 27, 1874, and after finishing school in 1895, he joined the Standard Oil Company of New York at Olean, N. Y., and later entered the employ of the Solar Refining Company at Galatea, Ohio.

He is the discoverer of the Holmes cracking process, and was associated in the development of the Holmes-Manley process, both of which represented advances in gasoline manufacture.

He was engaged as assistant superintendent of the refining department when The Texas Company was organized in 1902, and has been continuously in the service of the organization since that time. He was made manager of refining, and became a director of the company in 1906, a vice president and chairman of the manufacturing committee in 1913, a member of the executive committee of The Texas Company and president of The Texas Company of Mexico in 1920, president of The Texas Steamship Company assuming direction of marine affairs in 1922, and finally was elevated to the presidency of The Texas Company in March, 1926.

PERSONAL PARAGRAPHS

George Morris of the Bradford Motor Works was a Tulsa visitor last week.

* * *

W. V. Alvord has been appointed chief engineer of the Venezuela Gulf Oil Corporation.

* * *

Perry Prescott, of the Prescott Company of Menominee, Mich., is the father of a baby girl.

* * *

W. P. Taylor, of the Atlantic Refining Company, is in Maracaibo to remain about one month.

* * *

Frank P. Monohan, of the D. F. Connolly Agency of Tulsa, Okla., is visiting the Texas Panhandle Field.

* * *

James B. Wheeler, formerly with the Skelly Oil Company at Ponca City, Okla., is now Texas representative of the Adams Royalty Company, with headquarters at Fort Worth.

* * *

Homer Craig and A. F. Simpson are leaving Maracaibo for New York and Tampico. Mr. Craig expresses himself as very well pleased with both oil and climatic conditions in Venezuela.

J. B. Simler, of the Bruce-Macbeth Engine Company, made a trip through the Texas Panhandle Field.

* * *

R. J. Scott, of the Hercules Motor Corporation of Canton, Ohio, attended the Gas Convention at Tulsa, Okla.

* * *

Charles Markey, of the Link-Belt Company of Indianapolis, Ind., visited Tulsa on one of his rounds of the oil trade.

* * *

William B. Way, formerly secretary of the Natural Gas Association of America, is in Tulsa for a brief vacation.

* * *

E. L. Whitney, of the McGraw, Baughman, Bearley Lumber Company, has completed a trip through the Texas oil fields.

* * *

William J. Healy, former president of the Northwest Pennsylvania Oil Producers Association, was in Tulsa last week.

* * *

Alex Laughlin, Jr., president of the Central Tube Company of Pittsburgh, Pa., visited the Mid-Continent oil fields recently.

* * *

W. K. Cadman, formerly at Eureka, Kans., has moved his office to Wichita, where he will continue his work in consulting geology.

* * *

Max Fuhrman, president of the Fuhrman Petroleum Co. of Okmulgee, Okla., is touring Europe and will be gone three months.

* * *

Charles Kimball of the Wiser Oil Company of Sistersville, W. Va., spent a week in Tulsa on a tour of the Mid-Continent Field.

* * *

R. H. Hubbell, of the Hill-Hubbell Company of Los Angeles, is a visitor in Tulsa. He is conferring with G. G. Langan, Mid-Continent manager.

* * *

Richard Repine, sales manager of the Foos Gas Engine Company of Springfield, Ohio, spent three weeks in the Mid-Continent and south Texas fields.

* * *

George W. Walton, of the Wilson-Snyder Manufacturing Company of Pittsburgh, Pa., visited Tulsa, Oklahoma, last week on a tour of the Mid-Continent Field.

* * *

John K. Lytle, for several years manager of the Frick-Reid store at Wewoka, has been transferred to Tulsa, Okla., and has taken up his new duties as city salesman.

* * *

F. J. Spang, vice president of Spang & Company, of Butler, Pa., makers of weldless drilling jars, is on his way back to Butler after a trip to the Texas Panhandle.

* * *

M. T. Archer of the National Supply Companies of Toledo, Ohio, visited Tulsa last week and left for the Texas fields which he will visit before returning to Toledo.

* * *

A. J. Smith, well known refining engineer of Wood River, Ill., spent a few days in Toledo, Ohio. Mr. Smith was formerly with the Paragon Refining Company of Toledo.

* * *

Harry Nolan, sales manager of the Continental Supply Company of St. Louis, has returned from a trip which included the Oklahoma fields and also the Texas Panhandle.

* * *

John W. Reigel, well known drilling contractor, has returned from his home in Bradford, Pa., to the Owensboro district of Kentucky and will keep busy during the summer.

* * *

Stockholders of the Texon Oil & Land Company at their annual meeting elected as directors: Claude B. Hudspeth, Charles Davis, John M. Wyatt, Grover L. Pickerell and Frank Gordon.

* * *

Daniel J. Danker, Boston banker and a large stockholder in the Midwest companies, was a visitor to Casper the past week. Mr. Danker has been visiting Wyoming annually for many years and was among the first to realize the great possibilities of the Salt Creek Field.

Joe T. Cook, who drilled a gas well in Crockett County, Texas, not long ago and sold it to The Texas Company, has opened an office in the W. T. Waggoner Building, Fort Worth.

* * *

D. R. Semmes, geologist now associated with E. B. Hopkins, 25 Broadway, New York, sailed for Rio Janeiro, Brazil, where he will spend several months making a geological reconnaissance.

* * *

Mr. and Mrs. Emmett R. Curtin, Jr., Westwood, Lima, Ohio, spent several days in Detroit, Mich. Mr. Curtin's father was among the leading oil and gas operators in the Lima and Indiana fields.

* * *

David Donoghue, head of the land and geological departments of the Texas Pacific Coal & Oil Company, with headquarters in Fort Worth, spent last week in the west Texas area around San Angelo.

* * *

E. B. Reeser, president of the Barnsdall Oil Company, has returned to his office in Tulsa, Okla., after a month's business trip on the Pacific Coast, where he inspected the company's California properties.

* * *

Charles A. Lockard, independent operator of Texas, Oklahoma, Pennsylvania and elsewhere, has just returned from the Panhandle district the magnitude of which, he says, is almost beyond comprehension.

* * *

Frank LeRoy Blanchard, editor of the Empire News, and head of the publicity department of the Henry L. Doherty & Company, was a visitor in Tulsa last week to attend the Natural Gasoline Convention.

* * *

DeWitt T. Ring, geologist of El Dorado, Ark., has left for Guatemala, Central America, where he will spend some time in the employ of the Guatemalan Government examining petroleum concessions in that country.

* * *

George Shryock, independent operator, who was at one time associated with T. N. Barnsdall, later opening up several pools in Kansas and elsewhere, has been laid up in Fort Worth for more than a week with a crippled foot.

* * *

J. B. Matthews, president of the First National Bank of Albany, Tex., and owner of the 40,000-acre Matthews ranch in Shackelford and Throckmorton Counties, is considering several drilling propositions on his property.

* * *

Gibson P. Dildine, of the Buckeye Pipe Line Company, at Lima, Ohio, accompanied by Mrs. Dildine and children, were called to Toledo, Ohio, on account of the death of Mr. Dildine's sister, Miss Helen Dildine, from an operation.

* * *

Charley Moon, of Scottsville, Ky., manager of the White Plains Oil & Gas Company (Snowden Interests), has been looking over the company's interests in the Owensboro, Kentucky Field. He was accompanied by W. D. Gilliam, a well known Scottsville operator.

* * *

Howard A. Michener, consulting geologist and petroleum engineer of Nashville, Tenn., spent some time looking over the various structures in the Willow Grove area of Clay County, Tennessee. Mr. Michener is well versed in the geology of the Volunteer State.

* * *

J. K. Lytle, who for several years has been manager of the Frick-Reid Supply Company's branch at Wewoka, Okla., has recently been transferred to the Tulsa office of that company. Mr. Lytle took up his new duties as Tulsa city salesman May 1. He joins with T. E. Haney, who is already well known to the equipment buyers in Tulsa.

* * *

E. L. Stoughton, sales manager of the Wico Electric Company, missed the Natural Gas Convention for the first time since that gathering has been held. Mr. Stoughton is the proud father of a baby boy. W. J. Burke, assistant sales manager of the Wico Company, was forced to miss the convention for the first time, when business detained him in the East. The Wico Company was represented at the convention by L. F. Smith, Mid-Continent manager.

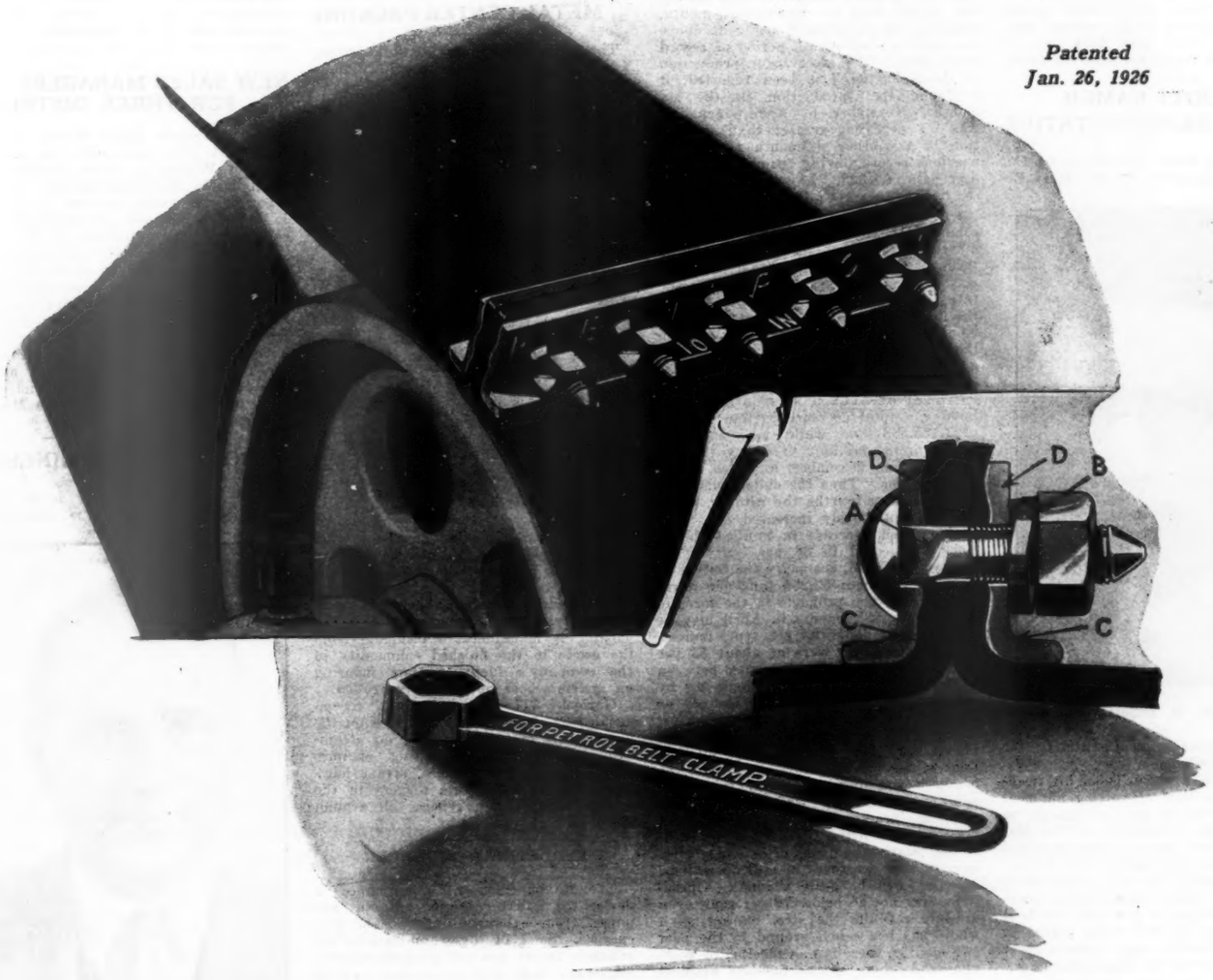
PETROL BELT CLAMPS

10,000 CLAMPS IN 33,000 MINUTES

Petrol belt clamps were only patented January 26, 1926
and to date over 10,000 have been sold

—WHY—

They are mechanically perfect **They last practically forever**
They make the best and strongest belt joint possible for Oil Field work
Their cost is very reasonable



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Stocks at all branches

MPS MAKE THE IDEAL COMBINATION

EQUIPMENT AND SUPPLIES

TO GIVE PROTECTION TO PRESSURE VALVE

A very potent factor, in modern drilling is the cooperation of the manufacturer of equipment with the operator in meeting his problems, and in anticipating his demands, wherever this is possible.

The great desirability of full protection to the back pressure valve, and consideration of various circumstances encountered in floating in long, heavy strings of casing, prompted the development of a new Baker Float Shoe. The design of this float shoe, it is said, greatly facilitates the work of the operator in attaining the safe and speedy placing of the string, demanded by today's advanced drilling methods, without in any way interfering with his regular procedure, by giving a more positive and complete protection to the back pressure valve than has before been achieved. It also can be used to cement through.

The Baker Casing Shoe Co. of Huntington Park, Calif., will furnish special information relating to its various combinations of shoes and back-pressure valve and their use in the different fields.

W. H. ELLIOTT NAMED STATE REPRESENTATIVE

The Maloney Tank Manufacturing Co. has recently appointed W. H. (Bill) Elliott its distributing representative for the State of Oklahoma.

W. H. Elliott

Mr. Elliott will make Tulsa his headquarters and is now organizing his field force, with adequate field equipment, to take care of the distribution of the Maloney bolted steel tanks in the principal petroleum points throughout the State.

It is his intention to carry a full stock of the various sizes of tanks and to place himself in position to give efficient field service. Stocks are now being placed in Bristow and Wewoka and within a short time, will be placed in Osage County.

Mr. Elliott has been connected with the firm of Black, Sivalls & Bryson, making his headquarters at Tulsa, as their district manager.

OKLAHOMA REPRESENTATIVES

The Eclipse Paint and Manufacturing Co., Cleveland, Ohio, specializing in manufacturing paints, varnishes, enamels and specialties for the oil, gas and electric light and power industries, announces the appointment of E. G. Johnson and F. M. Crow as sales representatives in the State of Oklahoma.

BUSINESS IN OIL COUNTRY GOODS VERY SATISFACTORY TO PIPE MILLS

By B. E. V. Luty

PITTSBURGH, Pa., May 17.—There has been no material increase or decrease in the volume of steel business placed with mills in the past week or two. Bookings are much lighter than in the last three months of the old year or even the first three months of the new year, when the buying was so heavy, but they are only slightly below the average of the past few years.

The recent period was one of quite exceptional activity, more so than was generally realized. The business was conducted so smoothly, the orders were so numerous, not being particularly large individually, and the shipments were made so easily, that not much impression was created.

Steel mill operations decreased a few per cent in April compared with March, but March was an exceptional month, standing out by about 6 per cent above the pace in a six-month period of record production. The steel ingot production of April having just been reported, it is found that production in the six months, November to April, inclusive, was 6.1 per cent greater than production in any other six-month period, the previous record having been made in the first half of 1923.

Steel Rate 80 Per Cent

On the basis of steel ingot capacity commonly accepted, 56,000,000 gross tons a year, production in the six months through April, also production in April, was at 88 per cent of capacity. The rate was somewhat above 88 per cent in the fore part of the month and somewhat below in the latter part. The rate in the first half of May has probably been a trifle above 80 per cent.

The Steel Corp.'s unfilled obligations decreased by 511,959 tons during April, making a total decrease in four months of 1,165,388 tons, while there had been increases in the four preceding months, September to December, inclusive, of 1,520,561 tons. Thus the obligations went down at three-fourths the rate by which they had previously increased.

The April decrease in unfilled obligations was equal to 38 per cent of capacity in April, capacity as officially given being about 52,250 tons per working day, of steel products in the form in which sold. Shipments in April may be estimated at about 93 per cent, indicating that bookings were at about 55 per cent of capacity. The difference between bookings and shipments is made up by old business, some of it only a week or a few weeks old, some quite old, as for instance rail business, orders having been placed for this season chiefly in September, October and November, while the heaviest shipping season is the early months of the year. Rail mills are now shipping practically at capacity, but booking very little.

The relative lightness of bookings presages further decreases in mill operations, but this will be quite gradual. Operations may not go below 70 per cent, even in July. While the steel market as a whole has lost much ground in the past two months, there is no canceling or postponing, as there was no forward business of a character that would admit of delay, and there is no liquidation of stocks of steel by buyers since practically no stocks accumulated. Often in the past there have been sharp drops in mill operations on account of postponements and liquidation. Consumption is probably decreasing somewhat, but it has a very good momentum.

Increase in Pipe Mills

At the pipe mills there has been no decrease in operations, and none is expected, but rather perhaps a slight increase in the next few weeks. This may come from heavier demand for merchant pipe, which has been a trifle sluggish compared with oil country goods, perhaps on account of the backward season. Business in oil country goods has been very satisfactory to the pipe mills, giving them substantially full operation of lap weld furnaces, while some butt weld furnaces are idle. Counting out plants inactive for some time, pipe mill operations are at about 85 per cent; counting in all equipment they are at about 80 per cent.

Merchant bars are a shade easier, being now 1.90 to 2.00 cents, according to size of order.

Pig iron, coke and scrap are dull and unchanged.

INTRODUCE NEW TYPE METAL CENTER PACKING

The Garlock Packing Co., of Palmyra, N. Y., has announced through its various sales offices the placing on the market of a new type of metal center packing.

This new product is known as Garlock 377. It is a lubricated, non-friction metal packing with side walls, back and cushion of frictioned asbestos cloth. The packing is manufactured complete from the crude to the finished commodity in the company's factories thus insuring an article whose quality is controlled.

Garlock 377 is particularly recommended by the makers for service on the piston rods of main engines on steamships, deck engines, hoisting engines, steam shovels and dredges, steam hammers, kickers and steam niggers in the lumber trade and a general all around steam engine packing.

INDUSTRIAL SILENCER

The Maxim Silencer Co. announces a device for quieting air, steam and gas noises from exhausts, intakes and discharges. Some of these applications are exhausts on oil, gas and gasoline engines, stationary and marine engines, uniflow steam engines and steam pumps; intakes of air compressors and rotary blowers, and vacuum pump discharges, air or steam safety valves, continuous air, gas or steam discharges.

NEW REPRESENTATIVE

L. E. Tripp has been appointed as representative in eastern Oklahoma for the Butler Manufacturing Co. of Kansas City, Mo. He succeeds J. N. Williams, who has resigned. The new Butler sales office in Tulsa, will be at 536 Mayo Building.

RYERSON CO. ACQUIRES REINFORCING DIVISION

Joseph T. Ryerson & Son, Inc., have taken over the reinforcing bar division of the Penn Metal Co. of Boston. They will immediately add to the sizes and tonnage carried. The facilities will also be increased and many features added in accordance with the standards of Ryerson Steel Service. General sales offices have been opened at 677 Concord Ave., Cambridge. A complete staff of engineers and draftsmen will estimate and quote on the steel reinforcing requirements of all types of construction.

For many years the Ryerson Co. has served the steel consuming interests of the East through its plants at Jersey City, N. J., and at Buffalo, N. Y. Other territories are reached from its plants in Chicago, Detroit, St. Louis, and Cincinnati.

The firm was first established in 1842, and for 83 years has engaged in the steel warehousing business, meeting the current as well as the emergency requirements of manufacturers and builders.

NEW SALES MANAGERS FOR THREE DISTRICTS

The Mathieson Alkali Works, Inc., of New York City, announces the appointment of William A. Field, formerly located in the St. Louis territory as Chicago district sales manager to succeed J. B. Peake, resigned. Frederick H. Lovenberg, formerly attached to the company's New York office, will take charge of the St. Louis district sales office.

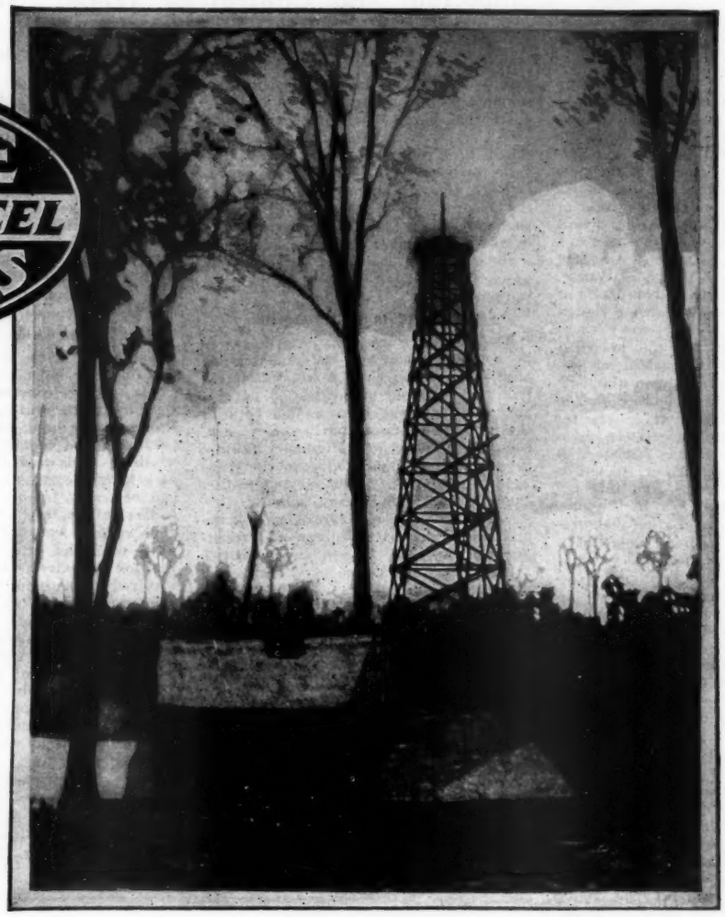
Arrangements have been completed with the Fields Point Manufacturing Corp., of Providence, R. I., whereby Daniel Townsend, president of that company, will have charge of the sales of the Mathieson Alkali Works, Inc., as well as his own company, in the New England territory, under the direction of the Mathieson general sales offices.

PRODUCTION ENGINEER

Fred C. Goldsmith, for many years closely identified with the engineering departments of several major motor car manufacturers, and who established a unique record in the automotive industry during 1923-24 in the speed in which he re-tooled the old Chalmers Motor Car Co. plant preparatory to the production of Chrysler motor cars, has become associated with the W-K-M Co., Inc., of Houston, manufacturers of oil field equipment, as production engineer.

Fred C. Goldsmith

MOORE
TUBULAR STEEL
DERRICKS



One of many Moore Derricks at Palembang, Sumatra, used by Niederlandsche Coloniale Petroleum Maatschappij

In the Dutch East Indies

they praise its strength

THUS writes Mr. Harry W. Rhinelander, from Palembang, Sumatra, about the Moore Derrick:

"On one of the wells, the 10" casing froze at about 1200 feet. We had 7 lines on the derrick and a 24-inch belt pulley on the engine. Using the calf wheel to pull on, we parted the casing, *and two of the concrete posts under one side of the rig were forced down in the ground about two inches.* There were no ill effects on the derrick—we never thought it would stand it, but it did."

Mr. Rhinelander continues:

"This is the first time I have worked on Moore Derricks; although I have worked on steel rigs at home. From my experience here, I can say I prefer the Moore to any other kind, including wood rigs."

The strength of the Moore Derrick surprises even its best friends. That's why there are more Moore derricks in use than of all other steel derricks combined.

Write for Catalog

Lee C. Moore & Co., Inc.

Pittsburgh, Penna.

Tulsa, Okla. Casper, Wyo. Dallas, Texas
Shreveport, La. Parkersburg, W. Va.

What Natural Gas Means to Producer

Waste of Open Flow Measurements. Pressure Method of Gauging. Completion and Control of Wells. Subsurface Leakage

By E. O. Bennett*
Natural Gas Engineer, United States Bureau of Mines

Natural gas with its stored up energy is necessary for the efficient production of crude oil. The majority of oil and gas producers realize this today, but until recently, natural gas was generally believed to be detrimental to the production of oil and was disposed of as soon and as cheaply as possible. Gas in sands overlying the oil bearing strata and that in contact with the oil, was considered only as it constituted a hazard in drilling operations. Today, of course, the same hazard exists, but because of the usefulness of the gas it is being viewed in a different light.

Natural gas is one of the principal subjects discussed by the modern oil producer, and he is calling upon the natural gas engineer for assistance in the solution of his problem. It is gratifying, to those of us immediately associated with the natural gas industry, to know that such an important change in viewpoint is taking place, and that we are entering on a new era in the production and handling of this valuable natural commodity. This co-operation between the oil and gas man has brought into common use such terms as: Gas-factor, solubility, expulsive energy, potential energy, viscosities of mixtures, expansions of gases and many others, all of which suggest the close relationship existing between natural gas and oil.

Potential Energy

The potential energy which nature has stored in the gas that is found in solution in crude oil or in contact with it in the ground is today being put to useful work in elevating the oil to the surface. After it has done this useful work the gas is still available for use in the various ways with which most of us are familiar. There is energy equal to about four horsepower available in every 1,000 feet of gas delivered in 24 hours, when expanded from an initial pressure of 500 pounds per square inch down to atmospheric pressure. When one stops to consider the potential energy available in all the gas produced in this country he must realize that this energy should be put to work to eliminate much of the mechanical power otherwise necessary for lifting oil.

Economic Recovery

The problem of the oil man is to recover crude oil and this is also becoming the problem of the gas man. Oil travels through the sands only when it is made to do so as it has in itself no migratory power. Two of the factors which will cause oil to move in sub-surface structures are water pressure and gas pressure. Gas pressure is the more important and also is the one with which we as gas men are primarily concerned.

To obtain the ultimate economic recovery of oil from a well it is necessary to utilize efficiently every bit of energy in the gas and a fundamental knowledge of the laws and characteristics of gas is needed to put to work the heretofore wasted energy. Closer co-operation between the oil operator and the gas operator is resulting in conservation and greater recovery for each. The natural gasoline plant operator, who is dependent upon both oil and gas men for his commodity, profits by this better relationship, and in turn, the consuming public is benefited.

Prevention of Waste

The day is not far distant when one traveling through virgin oil fields will no longer hear the terrific shriek of gas rushing from a blow-off or trap. Such a sound can mean but one thing, and that is waste. The time for silencing this sound has almost arrived, for the industry has begun to realize that the excess gas characteristic of flush production will, if conserved, be of great future value to both the oil and the gas operator,—to the oil operator by increasing the recovery of oil without using mechanical power, and to the gas operator by assuring a longer life to the commodity with which he deals and by providing protection to his investment in physical equipment.

Gas Factor in Oil Production

The idea of conserving natural gas is by no means new but, unfortunately, it has not been practiced to its fullest extent. Inestimable quantities of natural gas therefore have been wasted both in the production of oil and in some operations of the natural gas industry. Lewis[1] in a statement published some 10 years ago in a Bureau of Mines publication sums up this situation as follows:

"While the operator cannot control the original conditions of energy and resistance, in the sand, he can partly control the efficiency of expulsion. As it is the energy contained in the compressed and absorbed gas rather than the oil, that is exhausted, it is but logical to judge the efficiency of a producing method largely by the relative quantities of gas produced with each barrel of oil (the amount of free gas, in cubic feet, produced with a barrel of oil is now called the gas-factor). If by a change in the method the producer lessens the proportion of gas with each barrel of oil, he should increase the total recovery of oil correspondingly, even if the rate of production is temporarily reduced."

[1]Lewis, J. O., Methods of Increasing the Recovery of Oil From Wells, Bul. 148, Bureau of Mines, 1917.

Proper engineering methods applied to gas and oil fields well advanced in their natural decline often prolong their lives and increase their oil yields to the benefit of all concerned. Individual gas wells, which have been abandoned for several years have been brought back to life by the adoption of better methods of control. The reconditioning of these wells into good and consistent producers has resulted in the gain of millions of cubic feet of gas that otherwise would have been lost had obsolete methods of operation been continued.

Completion of Wells

There are many structures containing gas that are independent of oil bearing sands and here conservation may be practiced by the natural gas men alone. Great skill must be used, however, in properly preparing and completing wells in many of these fields and in providing means of getting the gas to the place where it can be used.

The drilling and completing of a gas well appears easy to many people who have not tried it. The outsider little realizes the extreme hazards and expense involved when completing wells into high pressure sands. Tight casing joints and proper cementing are required to prevent leaks and water troubles. Enormous quantities of gas may be lost beyond recovery on account of sub-surface leakage. From its elusive nature, gas is more difficult to hold than a liquid and small apertures that would be of no consequence in oil wells will permit the escape of much gas.

Sub-Surface Leakage

That sub-surface leakage of large quantities of gas exists may be shown by the fact that the gas production of a structure rarely, if ever, equals the original estimate. The structure may, however, have contained much more gas than the amount estimated. As an example, assume a 4,000-foot well with an initial well-head shut-in pressure of 2,000 pounds per square inch. If the gravity of the gas is 0.7 the actual shut-in pressure in the structure will be 2,217 pounds per square inch or 217 pounds per square inch more than the operator recognized it to be. This is due to the actual weight of the column of gas in the well, similar to the liquid head in hydraulic problems. Since the actual pressure in the sand is 2,217 pounds per square inch instead of 2,000 pounds there is 2,217/2,000, or 1.109 times as much gas in the sand as originally supposed, as the volume of gas in the structure is proportional to the pressure in it. In addition there is still a further increase in volume of from 10 to 15 per cent on account of the compressibility of the gas. Assuming the compressibility to be 10 per cent there would be 1.109 × 1.1, or 1.22 times the original estimated volume. If then a producer gets but 80 per cent of the total gas in the structure, computed by methods in use, his loss would not be 20 per cent, but actually 35 per cent, which is 75 per cent greater than estimated.

The production of different sands into the same well usually results in losses. Where one sand becomes flooded from edge water another gas sand, which would normally be free of water might become prematurely flooded. The gas thus trapped in the sand would be lost. It would usually be more economical to put a well down to each sand as it is very seldom that a separate sand contains gas at the same pressure and leakage from one to the others is bound to occur, even if water trapping is absent.

Control of Gas Wells

Although much of our original supply of natural gas is already gone, the volume remaining underground can be better conserved than at present. Gas can be kept for use over a greater period of time by controlling the producing rate of existing wells, and by a careful study of future drilling and development methods, especially with reference to well spacing, to the rate of decline of production and to water problems. If the total cumulative production is plotted against the absolute shut-in pressure at the sand face the resulting curves should give a very good basis for studying well conditions and for estimating reserve gas supply. They also afford a means of estimating water encroachment and sub-surface leakage of gas.

Until recently the best known method for measuring the capacity of a well was to let it blow unrestricted to the atmosphere until the pressure and flow rate became constant. It is interesting to make a comparison between a gas reservoir and a steam boiler; each contains a definite amount of elastic fluid, under pressure. I wonder if any of us have ever seen a steam boiler blown to the atmosphere to find at what rate steam could be produced. And I would like to ask if the blowing of a well is any more logical than the blowing of a steam boiler?

Fortunately, a more reliable and less wasteful system of gauging well capacity is now available, which I will discuss in a few minutes. Before doing so, however, I would like to point out some little considered aspects of "open flow" measurements.

For some itme past, this State and others, in the interest of conservation have restricted the amount of gas that may be withdrawn from a well or a

(Continued on Page 164)

*Read by permission of the Director of the United States Bureau of Mines before the Twenty-first Annual Convention of the Natural Gas Association of America, at Tulsa, Okla., May 18, 1926.

SUGGESTED METHODS BY WHICH CONSERVATION MAY BE PRACTICED

By Julian D. Sears
Administrative Geologist, U. S. Geological Survey

Three outstanding points of the American petroleum situation are that demand is already greater than our domestic production and will continue steadily to increase, and that our natural petroleum is a rapidly waning resource, and in a comparatively few years we may face a shortage that would seriously affect the welfare of the nation. Third, failing supplies can be augmented from foreign sources and from substitutes only at far greater cost of money and human labor. These three points form the problem—and the only answer, I believe, is conservation. By all means prepare through foresight and research to meet the shortage when it does come, but postpone its arrival as long as possible.

Before discussing methods by which conservation may be practised, it will be well to outline some of the troubles which conservation is meant to overcome, and the reasons for these troubles.

In the first place, unlike the coal operator, the oil man cannot block out underground the exact location or amount of his reserve, and then produce it on schedule. He must search for the places most likely to have oil, and then test with the drill both for actual presence and for quantity. Even with the best geologic advice his percentage of failures is lamentably large.

Fugitive Nature of Oil

In the second place, even where oil is present underground, it is a wandering material. You may have oil under your lease, but if you don't drill to it, or if you shut down your well, you will probably find later that the man on the next lease had drained it all out through his well, or that by reduction of gas pressure it may have become "dead" oil and unrecoverable. Thus in most cases each operator hustles to take out not only all of his own oil but also as much as his neighbor's as he can get by offset wells, and if the field happens to be held by many operators, its oil is brought to the surface as rapidly as possible, regardless of the market.

With the uncertainty in finding oil, and the general scramble to produce it as rapidly as possible after it is found, there is, under present rules of the game, but little chance to stabilize the industry. Even though the demand for petroleum can be gauged with fair accuracy in advance, the industry cannot plan to produce just that amount. Thus there are recurrent periods of overproduction that are more or less demoralizing to the industry.

Wastes and Losses

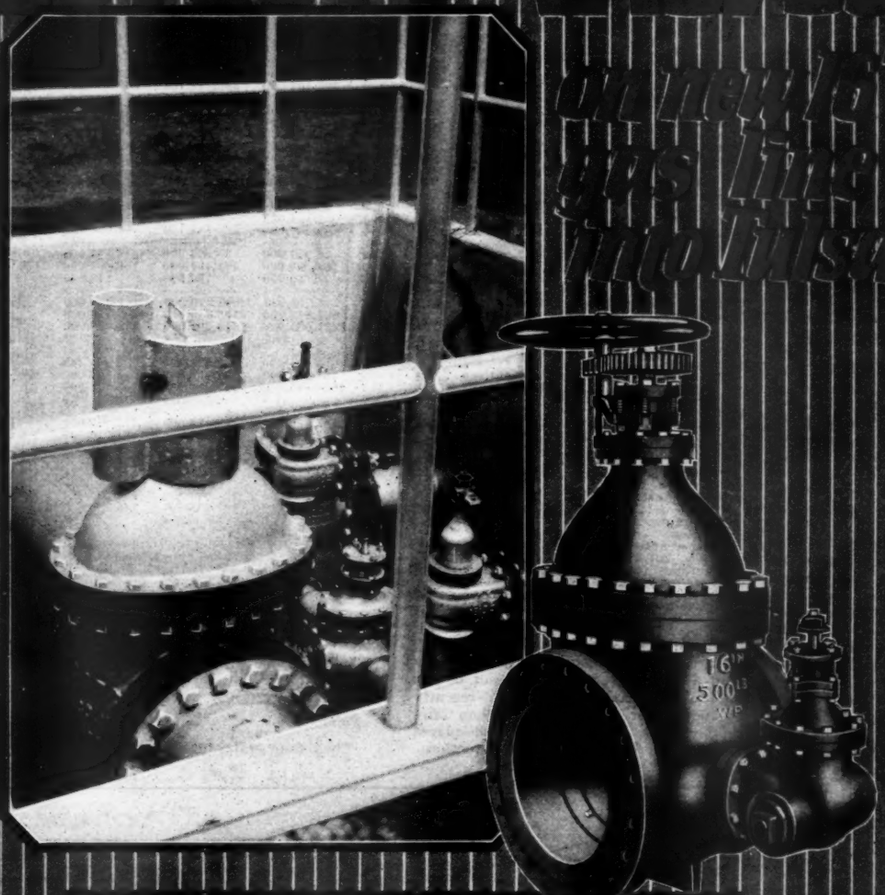
For the reasons already indicated and from other causes to be mentioned, there are wastes and losses in production and consumption that are costly both to the industry and to the nation.

Some of these may be dismissed with only brief mention, either because they

(Contniued on Page 168)

WESTCOTT VALVES

on new 16" gas line into Tulsa



WESTCOTT 16" Spur Gear and By-Pass Valves are used on the Oklahoma Natural Gas Company's new 16" gas line into Tulsa. One of these Valves as it appears in the line is shown above.

It is the constant aim of the entire Westcott organization to produce the best Valves that can be made for the oil and gas industry. Sizes up to 20" for working pressures up to 1600 pounds.

"If CONTINENTAL Sells It, There Is No Better"

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CONTINENTAL

Industrial Security of Natural Gas

Four Billion Dollar Business that Furnishes Light, Heat and Power to 17,000,000 People in the United States

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

Probably 17,000,000 people in the United States are today enjoying heat, light and power from natural gas.

And while the United States is producing and consuming at least 70 per cent of all the crude oil in the world it is producing and consuming 95 per cent of the natural gas.

After the United States, Canada is producing more natural gas than any other country—in 1923 slightly over 8,000,000,000 cubic feet, or a little less than 1 per cent as much as we produced that year. The output was worth about $4,000,000 . About $25,000,000 was invested in the industry in that country most of which is the southwestern part of the province of Ontario. Rumania, France, Germany and Australia each produce some natural gas—but in none of these countries is the production large enough to constitute an "industry," however valuable the output may be locally.

Hence, while crude oil may be produced in one part of the world and the products made from it used in any other part of the world the "market radius" of natural gas, as such, is, at best, only a few hundred miles. "From field to customer" is a short story when it comes to natural gas.

Four Billion Industry

While natural gas has been known for over a hundred years in the United States the first incorporated gas company, "the Fredonia Gas, Light & Water Works Co.," was organized in 1865. In 60 years the natural gas industry has grown to a "Four Billion Dollar Industry" with over 66,000 miles of pipe line, serving 2,000 communities and over 3,400,000 consumers—probably 17,000,000 people, or about one-seventh of the entire population of the United States.

Until 1923, the year that saw eight great oil fields brought to their peak of production, the area east of the Mississippi River produced more natural gas than any other area in the United States. But 1923 marks the turning point, for in that year the eastern area produced 393,000,000,000 cubic feet of natural gas—and the Mid-Continent 447,000,000,000 cubic feet. Four of the eight major oil fields developed in 1923 were in the Mid-Continent. California, which contributed three of the big, new oil fields, also showed a corresponding increase in her output of natural gas. The following tabulations show clearly that the eastern area, as a producer of natural gas, has passed its peak.

Area—	1920	1924
Eastern	462,991,000,000	359,686,200,000
Mid-Cont.	310,475,000,000	554,840,000,000
Rky. Mtn.	13,784,500,000	47,154,600,000
California	73,263,000,000	189,692,000,000
Scattering	26,500,000	148,200,000
Total	860,540,000,000	1,141,521,000,000

Referring to the accompanying table showing data for a five-year period, it is interesting to note the changes in the output of different states during this relatively short time. In the area east of the Mississippi every state has declined except Illinois and Kentucky, where much new work in oil development has been carried on.

Western Increase

In the Mid-Continent, Kansas is about holding its own at around 25,000,000,000 cubic feet a year while each of the other states has shown an enormous increase.

State—	1920	1924
Kansas	26,891,000,000	25,580,000,000
Oklahoma	166,265,000,000	214,452,000,000
Texas	44,160,000,000	107,247,000,000
Arkansas	9,614,000,000	36,616,000,000
Louisiana	63,545,000,000	160,945,000,000

In this area the Monroe gas field, in northeast Louisiana, has been the great feature. Development in this field has been so intensive, and the output of gas so prolific, that this field has recently produced more natural gas than any similar area in the world—and places the state in fourth rank in production.

NATURAL GAS PRODUCTION AND CONSUMPTION OF UNITED STATES, 1920-1924, INCLUSIVE, WITH DISTRIBUTION OF CONSUMPTION

Data From Reports of United States Geological Survey

Area and State—	1920	1921	1922	1923	1924
East of Mississippi River:					
New York	8,522,000	6,583,000	6,947,000	6,497,000	6,196,000
Pennsylvania	128,175,000	86,144,000	101,276,000	112,562,000	105,863,000
West Virginia	244,745,000	174,920,800	195,288,000	203,867,000	182,285,000
Ohio	71,854,000	47,412,000	51,481,000	53,812,000	47,396,000
Indiana	1,853,000	1,066,000	947,000	880,000	998,000
Illinois	3,150,000	2,646,000	3,383,000	4,049,000	4,072,000
Kentucky	4,677,000	4,820,000	5,872,000	11,963,000	12,875,000
Tennessee	15,000	11,000	3,000	4,100	1,200
Total	462,991,000	323,602,800	365,197,000	393,624,100	359,686,200
Mid-Continent:					
Kansas	26,891,000	15,717,000	20,289,000	30,913,000	25,580,000
Oklahoma	166,265,000	124,058,000	140,631,000	203,082,000	214,452,000
Texas	44,160,000	44,504,000	47,945,000	74,535,000	107,247,000
Arkansas	9,614,000	4,280,000	9,700,000	24,515,000	36,616,000
Louisiana	63,545,000	58,004,000	70,267,000	112,031,000	160,945,000
Total	310,475,000	246,543,000	288,832,000	444,776,000	544,840,000
Rocky Mountain:					
Wyoming	12,956,000	15,608,000	23,427,000	35,523,000	46,036,000
Colorado	5,500	4,000	4,000	800	47,600
Montana	820,000	336,000	486,000	148,100	1,071,000
Total	13,784,500	15,948,000	23,917,000	35,671,900	47,154,600
California	73,263,000	75,942,000	84,580,000	131,434,000	189,692,000
Scattering states	26,500	16,200	20,000	153,000	148,200
TOTAL United States	860,540,000	662,052,000	762,546,000	1,006,976,000	1,141,521,000
Total value (1)	(3)	(3)	$264,873,000	$100,849,000	$105,779,000
(2)	$197,660,000	$174,617,000	$221,535,000	$240,001,000	$253,856,000
Value at M. cu. ft.	24.8	26.4	29.1	23.8	22.2
Domestic uses:					
Consumers	2,615,043	2,630,915	3,014,600	3,233,800	3,443,400
M. cu. ft.	286,001,000	248,334,000	254,413,000	277,050,000	285,152,000
Value	$120,769,000	$110,337,000	$126,902,000	$142,317,000	$154,075,000
Average price	38.7	44.4	49.9	51.4	54.0
Industrial uses:					
Drilling (4)	183,797,000	182,305,000	197,850,000	343,076,000	293,473,000
Value	$22,396,000	$21,649,000	$27,444,000	$26,816,500	$27,519,000
Average (5)	12.2	11.9	13.9	7.8	7.0
Manufacturing and other	328,412,000	231,413,000	310,283,000	386,841,000	462,893,000
Value	$64,495,000	$42,631,000	$67,189,000	$70,861,500	$72,236,000
Average	19.6	18.4	21.7	18.3	15.6
Total industrial	512,209,000	413,718,000	508,133,000	729,917,000	856,330,000
Value	$86,891,000	$64,280,000	$94,633,000	$97,678,000	$49,755,000
Average	17.0	15.5	18.6	13.4	11.6

Please note—All figures for gas volume are in cubic feet with the last three ciphers (000) omitted. All average prices are in cents per 1,000 cubic feet. (1) Value of gas at point of production. (2) Value at point of consumption. (3) Not available. (4) Also includes gas used for pumping on leases and operating natural gasoline plants. (5) Because most of this gas is used by its producers, this average price is not comparable with the price of gas sold for other industrial uses.

	In 1924
Oklahoma	214,452,000,000
California	189,692,000,000
West Virginia	182,285,000,000
Louisiana	160,945,000,000
Total	747,374,000,000

Thus four states produced, in 1924, almost 70 per cent of the total output of the United States.

Being frequently referred to as "the ideal fuel" it is only natural that natural gas should be "the bone of contention" between the domestic users and the great industries—and the greatest limitation to natural gas, as a vital resource, is the narrow limit to its economic transportation. And probably the public knows as little, or less, about why the price of gas in different areas and to domestic and industrial users varies so widely, as they do about why gasoline prices vary.

Average Price

From the large table we note that during the last five years the average price of natural gas for domestic uses has ranged from 38.7 to 54.0 cents per thousand cubic feet—and that, in 1924, about 25 per cent of the total consumption was for domestic purposes. Slightly over one-third of the total consumption was used for drilling and pumping and for operating natural gasoline plants. Thus about 40 per cent of the total natural gas was used in 1924 by a wide variety of industries including the manufacture of carbon black.

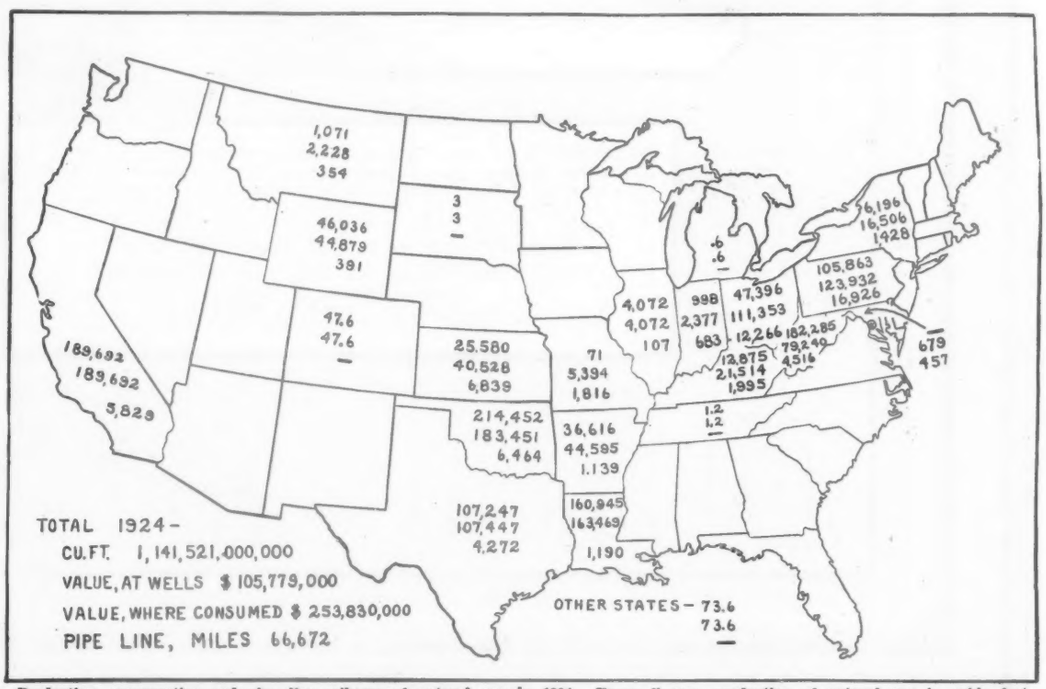
The following table gives an interesting sidelight on how the use of natural gas is distributed, in some of the leading states, between domestic users, for drilling purposes, etc., and for a wide range of manufacturing industries. The last six ciphers (000,000) have been omitted from all figures which are for the year 1924:

State—	Domestic	Drlg. etc.	M'n'f'g. etc.
Ohio	88,269	4,752	18,332
Pennsylvania	58,896	9,494	55,542
West Virginia	24,943	12,962	41,335
California	22,480	108,660	58,552
Oklahoma	17,184	113,774	47,493
Louisiana	4,523	18,073	140,873

Use By States

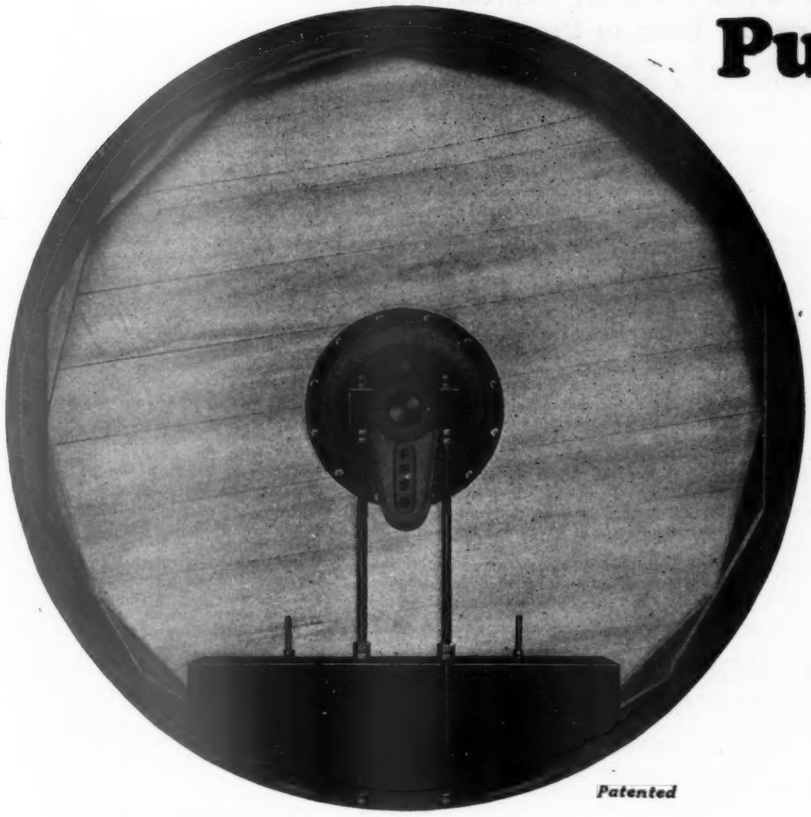
It is interesting to note that in Ohio the great bulk of the natural gas is used for domestic purposes—that Pennsyl-

(Continued on Page 160)



Production, consumption and pipe line mileage of natural gas in 1924. Upper figures, production of natural gas in cubic feet with last six ciphers (000,000) omitted. Middle figures, consumption of natural gas in cubic feet, last six ciphers omitted. Lower figures, total mileage of natural gas pipe lines, including gathering, trunk, transmission and distributing lines. Dash indicates no amount. Data from United States Geological Survey.

The even motion and flow of power on an equalized well is in marked contrast to the jerky, reciprocating motion of an unequalized well, whether it be with or without the common types of counterbalance.



Patented

Put a flywheel on your Rods

Every engine is equipped with a flywheel. "The function of a flywheel is to store up and to restore the periodical fluctuations of energy given to or taken from an engine or machine, and thus keep approximately constant the velocity of rotation." The motion of a flywheel is centrifugal—it rotates—it equalizes.

To put a flywheel on a string of sucker rods is obviously impractical. However, it has been found possible to make the bandwheel serve the purpose of a flywheel, thus also increasing its own efficiency. The motion of a bandwheel is centrifugal—it rotates, and by placing an O. C. S. Equalizer properly upon it, the bandwheel becomes a flywheel—it stores up energy created by the falling rods, and carries it over to the load side of the revolution when the rods and load are being lifted, maintaining a smooth, even motion throughout the cycle.

The O. C. S. Equalizer is more than a counterbalance—it equalizes.

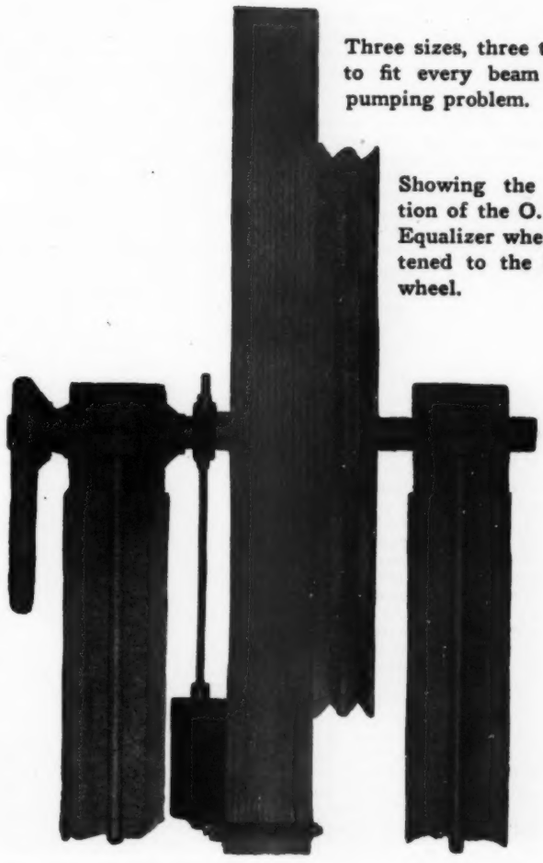
In the Mid-Continent:
All Supply Stores
Everywhere

In California:
Hillman-Cooney, Inc.
Los Angeles

THE OIL COUNTRY SPECIALTIES MFG. CO.
Coffeyville, Kansas

Three sizes, three types, to fit every beam well pumping problem.

Showing the location of the O. C. S. Equalizer when fastened to the bandwheel.



Complaints Can Be Contact Points

Offer Opportunities to Gas Company Representatives to Change Critic to Friend. Used to Promote Good Will

By John T. Naylon*
Division Manager, Oklahoma Gas & Electric Co., El Reno, Okla.

Several years ago, as the story goes, a certain Oklahoma citizen entered the office of a gas company, feeling he had a just complaint to make regarding his gas service. The local manager, possibly not in the best frame of mind, in the course of the conversation, told this complaining customer to go to h—. Instead he went to the Legislature and introduced a bill, doing away with the minimum bill on gas, which, when passed, deprived the gas companies of Oklahoma of a fair summer rate. This naturally necessitated an increasing block-rate schedule with its unfavorable reaction from the public, and expensive valuations and rate hearings before the regulatory body.

While this is an extreme case, it does bring out the point that a complaint, no matter how small, must be given immediate, careful, personal attention and investigation, and not considered disposed of until the customer is entirely satisfied with the results.

It is safe to say that a utility company that has no complaints or service calls is in worse shape than one which has a reasonable number. The former situation can be compared to a man sitting on top of a volcano, not knowing when something is going to break loose; while in the latter case, a well-organized, well-informed complaint and adjustment force can turn a complaint registered by a reasonable customer into a valuable asset, completely changing a latent enemy into an active friend.

A complaint has been defined as "an expression of grief, pain or resentment," and in the utility business some complaints are, in the minds of some customers, a combination of all three—but, no matter what the nature of the complaint may be, if properly handled and carefully investigated, it can be made of profit to the utility.

There are several kinds of contacts desired, namely, public relations, securities sales and appliance sales; but if the first is always in mind, the others will follow, so perhaps it is best to confine this brief discussion to the public or human relations standpoint. If sound public relations exist, resistance to securities and appliance sales is greatly lessened.

Two Kinds of Customers

We have two kinds of customers, or rather customer-moods, namely, the habitual or chronic kicker and the customer who has an occasional—real or fancied—complaint. The first class, for the most part, is quite unreasonable in its demands and claims and will not receive your explanations and ideas with an open or receptive mind. Each case must be handled individually, being patient and courteous, striving to find some point of contact other than the actual business at hand. These contacts are varied; for example, golf, baseball, children—their antics and "cute sayings," and even a pointed story or the Eighteenth Amendment may be used if necessary. When that contact is discovered, followed up and properly established, the customer's prejudice partly overcome and in a receptive mood—then the utility subject may be broached and disposed of to the complete satisfaction of the customer.

Then, too, we have the "baiter," or that person who just "blows off" and uses very strong language to bring out his side of the question. If the company representative cannot, by courteous treatment, seem to make any headway, then a little strong language on his part may bring the desired result. This must, however, be the last resort rather than the "opening gun."

The customer who enters your office with occasional complaint—real or fancied—and who is reasonable, should be given the same consideration as the habitual kicker; and possibly a little more, although this type will receive your ideas, see your viewpoint, and be much easier to convince than will the "chronic."

If a department were to be organized in the utility office, to be known as the "Contact Department," every person on the entire pay-roll would be a member, from the general manager to the lowest-paid laborer; as in his particular circle, socially, he is "the company," and each worker, if properly informed, will become an active contact point between the company and the public.

Human Element

We spend thousands of dollars in preliminary engineering and design when we are considering improvements to physical property such as lines, power houses, compressor stations and measuring equipment, and think nothing of it; but up to a short time ago, little, if any, attention has been paid to the greatest element of all, the human element, in selecting our contact personnel.

Obviously, in selecting a clerk for the service department, investigation must be made of the character and personal reputation of the applicant. Personal appearance must be considered and carefully watched at all times. Nor does this selection stop with the inside contact point. Your outside man, meter setter, meter reader, trouble or service man must present a pleasing and as cleanly appearance as his particular business may permit. Just because a man is setting meters in basements, or out-of-the-way places, does not mean that he should not be cleanly shaven or that his shoes be muddy, tracking up the customer's floor, with its ensuing adverse reaction. The point to make sure about is that each worker should be dressed and maintain his or her personal appearance in keeping with the nature of his or her respective work.

Nor should appearance stop with the human element. So many utility operators, in maintaining their automobiles, do not pay enough attention to their physical appearance. If an automobile will operate at a reasonable cost and give reasonable service, many executives are satisfied; when an occasional washing and painting will increase the advertising or contact value of this equipment, as well as prolong its life.

As stated before, each person on the pay roll is "the company" to his or her personal group or circle of friends, and on many occasions, when in a social, fraternal or church gathering, a question involving the company arises, the company member has a splendid opportunity to explain the position of the company on that particular subject and turn a complaint, so to speak, into a very advantageous contact. It is not meant that each member should be thoroughly familiar with the mass of detail in the operation of a utility, but he should be familiar with the "high spots." If, however, he cannot discuss intelligently the question at hand, he should be so familiar with the organization that he will and should, next day, refer this complaint to the proper department for investigation and disposition. Our company has found that inspection trips, member meetings and the publication of a company paper or house organ have informed our members on the company policies, aims and ideals in quite an efficient and effective manner. Such educational media, showing the company's interest in the individual worker, increases his self-respect and interest in the company and its welfare, which makes him a better man and a better worker.

Personal Contact

Complaints are registered in a utility office by mail, telephone or personal call. In any case, a personal call must be made at the customer's premises and a personal interview obtained. It is quite easy for a person to write an uncomplimentary letter or make uncomplimentary statements over the telephone, but when confronted by the proper representative of the company, face to face in his own office or home, his inherent sense of hospitality is aroused and the company representative is almost always invited to enter, sit down and discuss the situation, with usually very beneficial results.

To natural gas men, this point of the inspection of premises is most important. The most prevalent complaint, I imagine, is that of the high bill. The best adjustment man available should be assigned to this type of complaint investigation, because it is the source of latent trouble more than any other.

You will readily imagine the reaction on the complaining customer if a representative of the gas company, pleasing in appearance and driving a clean, nice-appearing car or truck drives up before the house, rings the front door bell and is admitted to the house through the front door. Entering through the front door has two advantages; first, that the investigator has an opportunity to see operating conditions as they really are; and second, it adds a little dignity to the investigator and places him a little above the average company representative who enters the customer's premises. The investigator should, by all means, interview the husband or wife, as they are the ones who have registered the complain, and are the ones to be satisfied. We have found it advisable in some cases to make an appointment with the husband, either early in the morning or in the evening, to inspect the premises together — the morning being preferable.

Little courtesies and attention sometimes have great effect on vital questions.

(Continued on Page 172)

*Before the Natural Gas Association of America at Tulsa, Okla., May 18, 1926.

OFFICIAL AUTOMOBILE FIGURES FROM MANUFACTURERS' RECORDS

By L. M. Fanning

The National Automobile Chamber of Commerce has just issued its 1926 edition of Facts and Figures of the Automobile Industry, containing many statistical facts of interest to the oil industry. The chamber points out as outstanding among the developments of the past year the fact that countries abroad bought more than a half million motor vehicles, a gain of 39 per cent. Foreign lands now have 19 per cent of the total world registration, and their demand for motor transport is growing rapidly. Motor vehicle factories are busy all over the world, and at the same time American exports are increasing each month.

Total motor vehicle exports in 1925 were 536,741 cars, divided as follows: Motor cars, 430,861, and trucks 105,880, representing 12 per cent of car production. The value of automotive products exported was $399,914,268.

Production of cars in the United States and Canada totaled 4,366,754 cars, divided as follows: Motor cars 3,839,302 and trucks 497,452. Registration in the United States at the end of the year totaled 19,954,347 cars, divided as follows: Motor cars 17,512,638, and trucks 2,441,709. The growth of production and registration is shown in the table below:

	Production		Registration			
	Pass. Cars	Trucks	Pass. Cars	Trucks	% Gain in Car and Truck Prod.	% Gain in Car and Truck Reg.
1895	4	.....	4	.....	.....	.....
1896	25	.....	11	.....	.....	.....
1897	100	.....	90	.....	.....	.....
1898	1,000	.....	800	.....	.....	.....
1899	2,500	.....	3,200	.....	.....	.....
1900	5,000	.....	8,000	.....	.....	.....
1901	7,000	.....	14,800	.....	40%	85%
1902	9,000	.....	23,000	.....	29%	55%
1903	11,235	.....	32,920	.....	25%	43%
1904	22,419	411	54,590	410	100%	67%
1905	34,550	450	77,400	600	11%	42%
1906	33,500	500	105,900	1,100	36%	37%
1907	43,300	700	140,300	1,700	30%	33%
1908	63,500	1,500	194,400	3,100	48%	39%
1909	127,731	3,255	305,950	6,050	100%	58%
1910	181,000	6,000	458,500	10,000	43%	50%
1911	199,319	10,655	619,500	20,000	12%	36%
1912	356,000	22,000	902,600	41,400	82%	48%
1913	461,500	23,500	1,194,262	63,800	28%	33%
1914	543,679	25,375	1,625,739	85,600	18%	36%
1915	818,618	74,000	2,309,666	136,000	57%	43%
1916	1,525,578	92,130	3,297,996	215,000	81%	44%
1917	1,740,792	128,157	4,657,340	326,000	15%	42%
1918	926,388	227,250	5,621,617	525,000	—38%	23%
1919	1,657,652	316,364	6,771,074	794,372	71%	33%
1920	*1,883,158	*322,039	8,235,859	1,006,082	12%	22%
1921	*1,514,000	*147,550	9,346,195	1,118,520	—25%	13%
1922	*2,406,396	*252,668	10,864,128	1,375,725	60%	17%
1923	*3,694,237	*392,760	13,479,608	1,612,569	50%	23%
1924	*3,243,285	*374,317	15,460,649	2,133,028	—11%	17%
1925	*3,839,302	*497,452	17,512,638	2,441,709	12%	14%

*Includes Canadian production.

The growth of the production of closed cars continued during 1925. Of the total production of 3,839,302 cars, 2,163,131, or 56 per cent were closed. The trend of closed and open car production is shown in the following table:

Closed and Open Car Production—(U. S. and Canada)

Year	Open	Closed	% Closed
1919	1,496,652	161,000	10.3
1920	1,563,022	320,136	17.0
1921	1,179,000	335,000	22.1
1922	1,691,368	715,028	30.0
1923	2,434,360	1,259,877	34.0
1924	1,845,803	1,397,482	43.0
1925	1,676,171	2,163,131	56.5

The wholesale value of motor vehicles and parts manufactured in 1925, is estimated at $4,210,174,963. The capital invested in automobile manufacturing is given as $1,888,028,810. The industry employs 3,204,442 workers directly and 241,200 indirectly, or a total of 3,445,642.

Motor vehicle taxes in 1925 totaled

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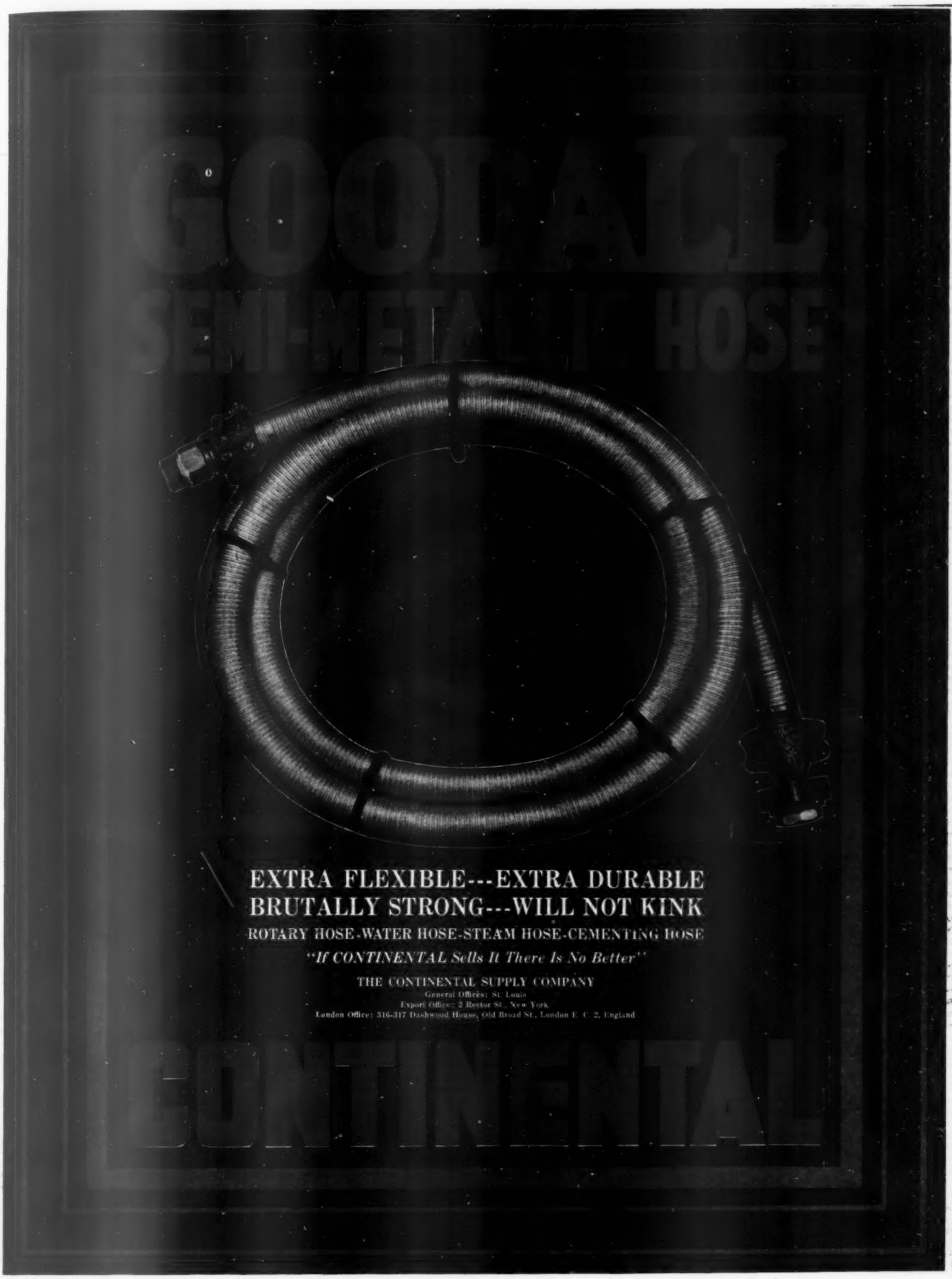
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SEMI-METALLIC HOSE
EXTRA FLEXIBLE---EXTRA DURABLE
BRUTALLY STRONG---WILL NOT KINK
ROTARY HOSE-WATER HOSE-STEAM HOSE-CEMENTING HOSE
"If CONTINENTAL Sells It There Is No Better"
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CONTINENTAL

Gas in Competition With Other Fuels

Declared to Be the Ultimate Source of Heat Energy and Ideal Fuel. Selling Arguments and Marketing Conditions

E. J. Stephany,* Pittsburgh, Pa.
Superintendent of Sales Department, Equitable Gas Company

Competition assumes different angles in different localities. Fuel prices and fuel service are not the same everywhere.

Natural gas has so many advantages that, to the casual observer, it hardly seems necessary for us to employ intensive selling methods. However, if our advantages are not made known while our competitors actively advertise and sell their product, the public will come to believe that ours is an inferior service. Before we can sell our goods it is necessary that we ourselves know our product.

Gas is the ideal fuel. In fact, no other fuel will burn until it is gasified. Before any other fuel can be used, it is necessary that a miniature gas works be operated so that gas may be generated. In every case, the efficiency of the operation with a liquid or a solid fuel is lowered below the efficiency of utilization possible with a gaseous fuel. Natural gas is clean, it is easily controlled, it requires no handling and storage expense, it can be burned in a very small space so that its heat can be concentrated, instantly applied and effectively used. These and many other advantages could be enumerated. It is worth while for every one of us occasionally to again sell himself on the wonderful advantages of our natural gas.

What Is Needed

A constant supply when needed, uniform quality and good service are required to make any fuel the ideal fuel to use. In many districts the natural gas industry has lost valuable business because the service has not been as nearly perfect as the user thought it could be. Of course, shortages during the colder weather in some places seem to be unavoidable. In the face of the declining supplies, it does not seem possible in many localities to maintain adequate service at all times. It must be admitted that where the service has been poor during winter weather it has often been due largely to inadequate rates for gas. Higher prices would have reduced the peak demands to more nearly meet the supply in many cases. We must also admit that gas distribution and piping conditions have not always been designed so as to give the best uniform service. But, in spite of all of these difficulties, we must not lose sight of the fact that gas IS the ideal fuel, and that gas service is generally very much better than the service given by other utilities and by other suppliers of fuel. A complete failure of service is very rare. We have no outages except in case of unusual accidents. Our low pressure conditions are generally no more serious than the low voltage condtions of the electrical industry. We do not have poor and varying qualities like coal and oil and the many irregularities which occur with other fuels.

In considering natural gas, the user, particularly the engineer, too often compares our product with other fuels on a B.t.u. basis. This is very unfair unless the efficiency of utilization is also considered. One B.t.u. in gas can very often, and usually does, do more effective work than one B.t.u. in a solid or liquid fuel. In fact, the cases where one B.t.u. in gas has replaced from three to five B.t.u.'s in some other fuel are numerous. We must always consider that the final cost of the product should be the determining factor and not the cost of the fuel itself. It has been aptly said that "It is not the cost of a fuel, but the cost of using it that counts."

The natural gas industry has been quite generally handicapped by inefficient appliances. These include poor designs which are unsafe and which produce disagreeable odors, and appliances which are very wasteful and inefficient, requiring two or more times as much gas as would be needed in proper appliances. The natural gas industry generally has paid too little attention to the installation in consumers' homes.

Now, to sell our product. After we know its advantages and the best method of application, it is necessary for us to inform our present and any prospective customers. Newspaper advertising, booklets and direct mail letters have been found to be useful but personal solicitation is undoubtedly the most effective. Some companies have installed merchandising departments which sell only the best types of gas appliances to their customers. The satisfaction which is expressed by the user of a modern appliance is the best proof of the value of this activity.

House to house inspectors have been employed by some companies. These men are able to examine in detail the piping, the appliances, their design, installation and adjustment and to recommend changes for improvement. In our own case we have found this to be very valuable in building up good will and satisfied customers. We plan to expand this work considerably.

Industrial engineers can do much to hold commercial and industrial business, even in the face of rising prices. In many cases they can regain business which was formerly lost to other fuels and even add to our list of customers concerns which have never before used gas. Here, particularly, the effect of poor service is felt. Comparisons between antiquated gas furnaces and ovens with modern oil burning equipment and other fuel burning devices, have sometimes apparently proved gas to be inferior. It has been possible in practically every operation to prove that gas is the superior fuel when modern appliances are employed.

It has been found very useful to have a laboratory in which appliances can be tested, and in which burners and devices can be developed. The laboratory helps us to avoid mistakes and more easily to convince our prospects.

Oil as Competitor

Oil has not been as serious a competitor in the Pittsburgh district as in some of the Mid-Continent fields and on the Pacific Coast, due to our higher prices for oil. We believe, however, that natural gas can be sold in competition with oil prices considerably less than those with which we compete. Competitive tests have been made in many industries which show that much less gas is required to replace oil than calculations indicate, that the uniformity of the product manufactured has been improved with gas, that the working conditions are better and that the application of thermostatic control to gas fired equipment has materially reduced the final cost of the product.

Bituminous coal is a competitor. In power plants of large size it has replaced gas. It is used in producer gas plants in some of the larger operations. Powdered coal has been used by a few of our industries, but its adoption was largely due to a previous lack of dependability of the gas supply rather than to any other advantages. For the large majority of industrial heating operations coal and coke have not competed successfully against gas.

Electricity as a competitor has not made any considerable strides in the Pittsburgh district. Of course, lighting is very largely done with electricity and more power is developed with electricity than with gas. We concede to the electric man that lighting and power are his fields, but we will not admit for a moment that the heating field belongs to him. The number of electric ranges in homes is about one-twenty-fifth of 1 per cent of the number of gas ranges. Electric water heating is practically unknown and we have no fear that it will ever come into use to any appreciable extent. In hotel and restaurants the waffle iron has been introduced quite largely. For many types of restaurants its use may be justified, because of advertising value, display and ease of operation. But large electric ranges have no justification whatever. A few electric baking installations have been made, but all of the larger ones have been abandoned, due to high cost. Some installations of small electric bake ovens can be found in show windows. In every one of these cases, however, the major part of the baking is done with gas in the rear of the shop. In one particularly large baking job we were able to replace the electric element with gas burners, because the cost of gas was considerably less than the demand charge for electricity alone. The total cost of electric operation was 962 per cent greater than with gas. We find that the only other commercial application of electricity of any importance is in brass melting. The only excuse for this use of electricity is because we had failed to help our customers to get good gas brass melting equipment. The loss of material in brass melting due to oxidation is very considerable and amounts to more than the cost of fuel in many

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*Before Natural Gas Association of America, Tulsa, Okla.

FRENCH MONOPOLY TO HANDLE OIL MAY GO TO PRIVATE COMPANY

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 15.—Especial interest is attached to the report that has come through the Department of Commerce, to the effect that the French Government may assign the right to operate a monopoly in the handling of petroleum products in France to private persons, instead of attempting to execute that monopoly by direct governmental agencies.

The French Government has followed in this respect very closely upon the action of Turkey, which solved its oil monopoly problem by having its law executed by the Standard Oil Company of New Jersey, retaining the right to control prices and other conditions.

The French law gives the state a monopoly of control of petroleum import operations and will become effective April 1, 1927, provided a complementary law is passed before that date establishing the necessary organized regulations. Confirmation of this report has been received from Trade Commissioner D. J. Reigan at Paris. The settlement that has been brought about now centers interest in the manner in which the French Government will undertake to supply its petroleum trade. Undoubtedly there will be great competition among the large oil companies for the privilege of executing its law, making a monopoly of petroleum. Whether it will be one company or several, and how the interest in this enterprise will be divided, involves many large matters for consideration.

In the case of Turkey, there was no question in respect to the broad attitude that that government woud adopt in relegating its monopoly in petroleum to a foreign corporation. From the beginning it was certain that neither Great Britain nor France would be given that privilege. It is well known that the Turks are very jealous of the extension of the influence of either of these countries within its domain. That left the determination of a controlling monopoly to be executed either by an American or a Russian company, the Russian company having been considered at one time because of the large petroleum production that might be expected from that country to supply petroleum needs. However, the fact that the Standard Oil Co. of New Jersey already had invested $3,000,000 in its oil distribution plants in Turkey, which Russian interests could not afford to duplicate and which permitted the Standard company to deal with the Turkish Government on attractive terms, became the determining factor in this decision. As is well known the Turkish Government is extremely friendly toward American corporations because they are not under suspicion as the vanguard for political extension of control by foreign powers.

In the case of France, however, the Nationals of the country being tied up with British, Holland and American oil companies, the situation that confronts the government in disposing of this privilege for the exceution of its petroleum monopoly is quite different. It may be that a French company will be selected for this privilege, or some foreign company, or a newly organized corporation, in which different groups of foreign oil companies may be interested will be selected.

New Law Necessary

It is not mandatory that this monopoly shall be operated by a private company, but the state may decide not to operate the monopoly itself, and delegate others to perform the necessary functions. This is permitted through the provision that such operations can be made only "by state representatives or agents accredited by the latter."

The right to delegate the monopoly power thus conceded may in practice limit the active participation of the state in import operations, according to reports in France. The exact status of the government's participation is yet to be defined by the special law which will determine before April 1, 1927, the general organization regulations of the import monopoly by the state, or by its concession to a company in which the state will be interested.

The elimination from the final amendment of the stipulation of the amount of capital which the mixed company was to have resulted partly from the criticisms that the amount called for would be wholly inadequate to pay for the facilities of the petroleum companies now operating in France, should the state take them over. Unofficial estimates placed the amount of capital so involved at over 2,000,000,000 francs, whereas the amounts proposed for the state's operation of the monopoly varied from only 200,000,000 to 400,000,000 francs.

Operating Economies in Gas Field

Developments in Drilling, Casing, Shutting Off, and Care of Wells and Transportation and Measurement of Natural Gas

By Robert W. Hendee*
Kingwood Pipe Line Co.

Many have been the papers delivered before this body anent conserving natural gas. Many have been the impassioned pleas by state geologists, conservation commissions, the Bureau of Mines and many others to stop the waste of this valuable fuel, but still, millions of feet with their multiplied heat units are leaving the gas sand never to reach the ultimate consumer, due to innumerable source of "leaks." Conservation was preached in West Virginia, Ohio, Indiana and Pennsylvania when it was an absolute necessity. Oklahoma and its sister states, at a time of plenty, are trying to put into practice preservation methods which the eastern gas states learned when they found the supply of natural gas was not unlimited and was actually diminishing. It has been said that three quarters of the natural gas in Indiana was wasted and that the supply should have lasted 64 years instead of 16.

Unluckily, natural gas has been, and will continue to be, a by-product of the petroleum business, for, with the exception of the gas producing companies, themselves, very few operators drill with the hopes of striking gas. If it were not that much gas is struck in the search for oil, gas pools would not be discovered. The market value of gas in the ground is small compared with its heat and power producing potentialities. Not only is gas of little interest to the producer for its monetary value but it very often is a hindrance to the deeper drilling in order to reach the "black gold." This particularly in the past and to some extent at present, has caused the greatest loss of gas to the consumer, be it the operators themselves, the industries or the domestic consumers.

Keep Waste at Minimum

Perhaps, although it seems incredible, there are those who wonder why the natural gas supply should be so carefully safeguarded. At frequent intervals there appear statements that the petroleum supply will last only 10, or at the most, 20 years, but how often is the general public told that its cleanest, cheapest and best fuel gas is also due to become a thing of the past? True, the communities which have been blessed with natural gas are in the minority, but nevertheless, everyone, down to the smallest domestic user, should have it impressed upon him that nature's supply is limited and that if more is being generated, the process is so slow that this generation and many to follow, will never be benefitted by the second supply.

Aside from being the "perfect fuel," why should the natural gas waste be kept at a minimum?

1. Because large amounts of capital have been invested in glass plants, cement works, smelters and numerous other industries which have been located where they are for no other reason than for the cheapness of the fuel. When this fuel is gone these industries are going to shut down, thereby throwing many people out of work and hence cutting down the source of income to the community.

2. Because many cities and towns, even as large as Tulsa, Oklahoma City, and Dallas in the Mid-Continent area, are to a great extent, dependent upon natural gas as a fuel for heating. In this area there are thousands of houses, especially bungalows with no basements, which have as their only source of heat, the natural gas stoves placed in the various rooms. What will be the effect on these thousands of domestic consumers if the slogan "Conserve Our Natural Gas" is not practiced from the oil and gas producer on down to the domestic consumer himself.

3. And lastly, consider the amount of money invested in the gas transportation and distribution systems on which taxes are levied; the number of employes who support the towns and pay taxes and the business which comes as a result of their being employed by the gas companies.

If the supply of natural gas is not unlimited and if there are many sources of waste, what is being done in the field to preserve the supply whereby the use of natural gas for domestic purposes may be available for many years to come?

Inasmuch as the purpose of this paper is to set forth any new field developments and economies of operation, not only to the company, but which will affect the consumer, the discussion will be carried on with the idea of conservation in mind; conservation to the company of dollars in operation, and at the other end, conservation of cubic feet of gas to the various consumers.

Where then are these losses, or where have they been in the past, and what is being done to combat them?

Drilling, Casing and Shutting in Wells

Volumes could be written on the wastes which attend the old method of developing new fields, but probably the most horrible example was the Cushing Pool, wherein conservative estimates place the gas loss as high as 100,000,000 cubic feet per day. Many wells of 30,000,000 to 40,000,000 were allowed to blow open for days. The sole idea of the operators was to produce the oil, which was either in the sand with the gas or in a sand just below it. In most instances the pressure and volume of the gas were so great that drilling to the oil-bearing sand was impossible until the wells were allowed to exhaust their gas production into the air, sufficient to permit the resumption of drilling.

Of course, in fields where prolific gas sands occur above the oil sand the proper procedure would be to set the casing and produce the gas. However, in many fields there is no outlet for the gas at the time the field is brought in, so the gas should be "mudded off" and retained in the sand for some future time and the wells then drilled deeper for the oil. Many of the companies are appreciation the value of the gas and are taking care to seal off the gas strata as they drill. There are several instances where oil companies have shut in gas wells, knowing that oil lay beneath, willing to make use of the gas and receive the revenue therefrom, until the gas had played out.

A good example of care being taken to produce the oil and gas without any waste was in the enormous Cromwell Field where the rotary was used to or near the top of the sand and then the well was drilled in with standard tools. Each well ready to drill in was equipped with a control casinghead, which may be closed even with the tools in the hole. Connected with the control casinghead were a flow line, separator and flow tanks. All of the oil was thereby saved, but for many days before the advent of the gasoline plants, the gas was conducted away and either blown in the air or burned. With the arrival of the gasoline plants this gas is now stripped of its gasoline content and in turn either returned to the lease for operating purposes or compressed by special compressors and delivered into the lines of one of the gas transmission systems. Some of the companies even tried flowing the oil through tubing, thereby holding a back pressure on the sand and conserving the gas; and thus putting off the day at which the well would have to be put on the pump. Aside from its fuel value, gas is the cheapest lifting power for the oil that is available.

Drilling Methods

The rotary method is by far the fastest and most successful in drilling through sands, clays, soft shales, etc. The rotary systems, using the mud-laden fluid, muds off each water and gas strata as it proceeds due to the wobbling and pounding of the drill pipe against the unlined sides of the hole. That is, the mud is cemented against the walls of the bored hole by the revolving drill pipe.

It is easily seen that this method of drilling is not the best for wildcatting, due to the mudding off of the sands. It is generally conceded that cable tools are best adapted to wildcatting; also for drilling in, bailing, testing and finishing a well.

At this point it is time to pay tribute to the Bureau of Mines, which, even as far back as the Cushing "blow-out," had men in the field to show the operators how to drill through the above mentioned gas sand by drilling with a hole full of mud-laden fluid. Before then, and since then, they have conducted experiments, run tests and issued pamphlets, dealing with every phase of waste and the methods for preventing it. They have men in the field or at the call of any operator who will show him the proper method of drilling, mudding, cementing or what not in connection with his drilling operations. Besides, they have been invaluable to the transportation companies, as will be shown later.

Another cause for terrible losses of gas is that proper precautions are not taken in setting the casing. This is especially true where the formations are loose and good seats are not to be found, as in Louisiana and Texas and also in some places in Oklahoma. The gas often escapes around the casing, loosens the ground rapidly and some times gains sufficient volume to blow the casing from the hole and to continue blowing until huge craters are formed.

There might have been excuses for these "wild wells" when they were the first one in a district, but such troubles are overcome now by cementing the casing after a good seat has been established on the cap rock. There are several methods of placing the cement on the outside of the casing such as the "one-plug," "dump bailer" and other methods, but it is not necessary to go into them here. Suffice it to say that cementing the casing is one of the great strides forward in preserving our oil and gas resources.

Care of the Wells

Even though every provision is taken to shut in the gas wells of today, and, although they are apparently very tight, the time will come when casing troubles will result and water will creep into the gas sand.

Some of the companies are applying protective pipe paint to every foot of pipe which goes into the hole and probably there will be a time when all companies will protect their pipe in some manner, looking to lengthening the life of the string. Also, samples of the various waters which are passed through are taken and analyzed for future reference.

In many of the older wells water becomes a hindrance. As mentioned above, this will probably happen to present day

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*Before the Natural Gas Association of America, Tulsa.

SUBSTITUTION OF INFERIOR OILS CHARGED IN SURVEY OF STATIONS

By L. M. Fanning
New York Bureau, The Oil and Gas Journal, 30 Church St., New York

The National Better Business Bureau of the Associated Advertising Clubs of the World has completed a preliminary investigation begun in the fall of 1924 at the instance of a number of oil companies of the practice on the part of some garages and non-oil company filling stations of substituting other or inferior motor oils for those which the motorist is entitled to receive.

The survey was necessarily limited, the marketing field for motor oil involving the products of 4,987 jobbing companies dispensed through over 500,000 filling stations or garages for use in over 20,000,000 automobiles. The investigation was conducted in six widely separated localities, and as the purpose of the work was to secure working knowledge of the selling methods of actual substitutors, the investigators were instructed to secure samples from those whom they had reason to suspect. No attempt was made to get a cross section result; that is, to sample every station in a given town or area. Attempt was not made to get any estimate of the actual amount of substitution being practiced other than to obtain satisfactory evidence that it is considerable and widespread.

The results verified evidence pertaining to garages and filling stations substituting, and showed 50 per cent of all investigated were substituting, divided as follows: 45 per cent of filling stations and 72 per cent of garages.

These results are not believed truly representative of conditions in the oil retailing field, as localities were picked where excessive substitution was suspected. However, the results indicate the prevalence of the practice.

The Better Business Bureau found that substitution in this field is probably more general than in most types of merchandising. The ease with which it can be practiced, the difficulty of detection by the average consumer and the lure of financial gain, make the field of unusual opportunity for the unscrupulous.

Questionnaires sent out to motorists indicate that the motorist is not fully aware that substitution exists. An interesting feature of the report deals with the policy of indiscriminately distributing signs bearing the trade marked name of widely advertised oils, it being brought out that this practice makes it easy for the unscrupulous dealer to secure and use such signs.

These are frequently attached to a post or to the station itself, and are only occasionally placed in conjunction with the tanks or drums used. These signs do not state that all oil sold at that station is of the advertised brand, nor do they indicate that substitution is not being practiced. The investigation showed this to be a way of substitution, some stations not pretending to sell the brand mentioned on attached signs.

The experience of the investigators and the analyses of the samples procured in the course of the investigations showed that other and frequently inferior oils

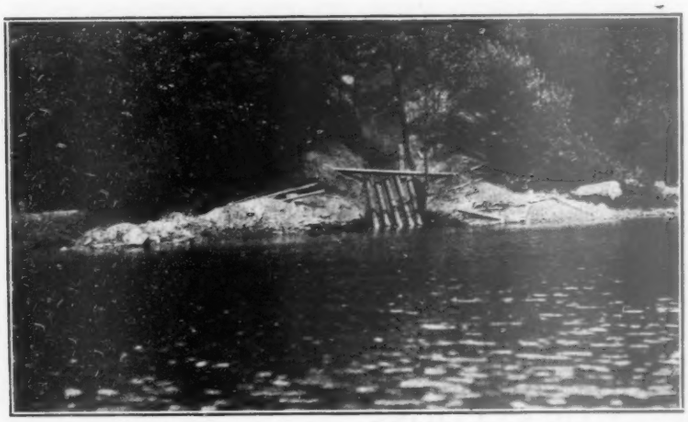
(Continued on Page 100)

Hope Natural Gas Company Operations in West Virginia

Illustrating the Difficulties of Extending Gas Lines in Remote Districts of Mountain State

Muscle, patience and dynamite were needed here.

As a precaution in the event of pipe lines being broken by accident, six lines were laid across the Kanawha River by the Hope Natural Gas Co., the six lines leading into the main line on each side of the stream. This made considerable dredging necessary, the photograph showing the dredge boats in operation.

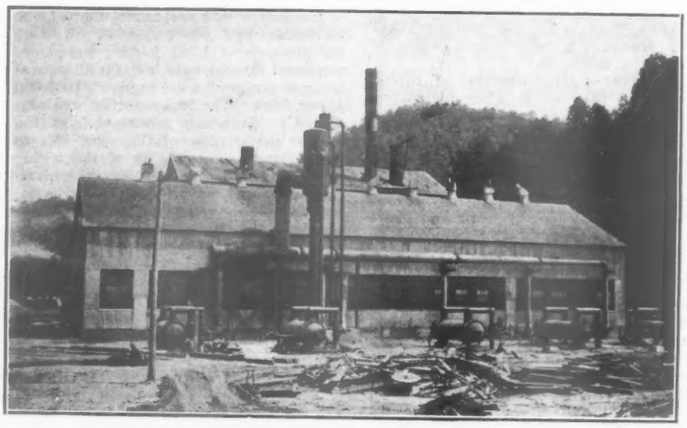


One more river to cross.

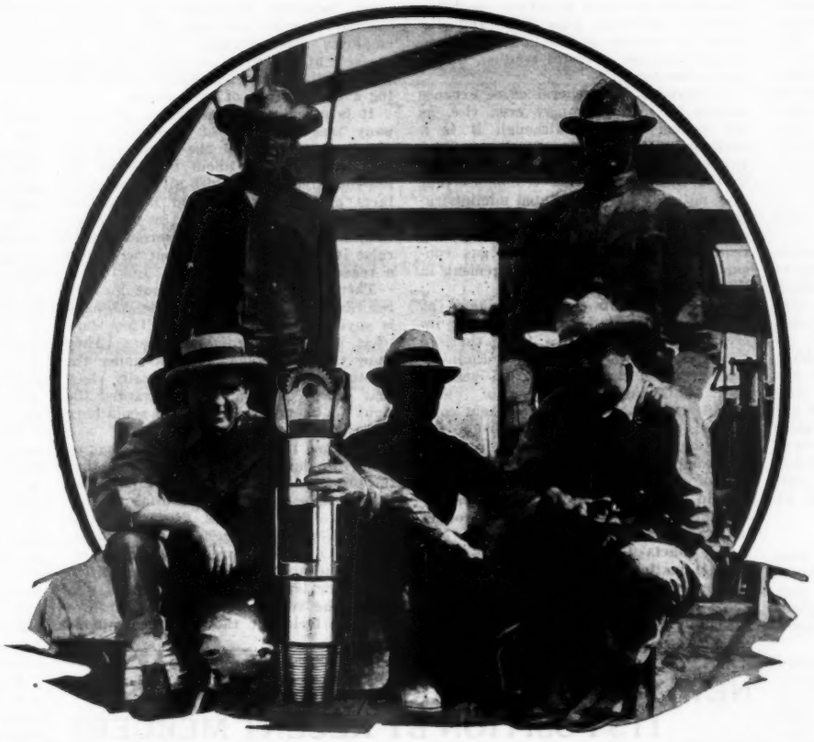
On summit of Cabin Creek Hill showing the ditch disappearing over the hill, with the Kanawha River visible in the distance. Here the line takes an 800-foot dive, only to climb the equally high hill on the other side of the valley.

Using the block and tackle to scale a hill, the sharp grade of which is only faintly suggested by the picture. The scene is laid in West Virginia.

Here we go under a railroad.



After work was started on the foundation of the John J. Cornwell compressor station, beds of quicksand were discovered. This unlooked-for trouble was overcome by driving piles.



Agathon Alloy Steel Bits Make Everybody Happy

The happiest fellows in the field are the roughnecks drilling with bits made of Agathon Alloy Steel. They wear smiles while the bits wear rock. And the bits keep on wearing rock and anything that comes in their way three times as long as bits made of ordinary steel. That means only one-third of the pullings for sharpening—one-third of the delays—and three times as much actual drilling in a given time. Doesn't that interest you? Then send for our Agathon Alloy Steel handbook and the help of our metallurgists. We furnish both without charge.

THE CENTRAL STEEL COMPANY, Massillon, Ohio

Swetland Bldg., Cleveland Book Bldg., Detroit Peoples Gas Bldg., Chicago
Aeolian Bldg., New York University Block, Syracuse Widener Bldg., Philadelphia
303 W. P. Story Bldg., Los Angeles, California. 404 West First St., Tulsa, Okla.

AGATHON
ALLOY STEELS

Gas Companies' Books Open to Public

Nature of Business Demands Frank Presentation of Facts Relating to Diminishing Supply and Rising Costs

Contrary to a widely prevalent notion, natural gas companies court, rather than shun, the airing of their financial affairs which inevitably attends rate hearings before public service commissions. Exception, of course, must be made of those states, fortunately few, where members of the commission regard their jobs as political ones and keep an ever-watchful eye on personal welfare. Even in these cases any reluctance to go into hearings is based, not upon aversion to publicity, but upon a conviction that political considerations, rather than the weight of evidence and a sense of fair dealing, will determine the outcome.

Few private commercial enterprises would submit without vigorous protest to such public exhibition of costs, income sources and profits as a gas company lays open to the view of all who care to see.

The reason for this readiness on the part of the gas company to reveal business details lies in the fact that it has nothing to conceal, that it asks only what any business organization must ask in order to succeed and, probably most important of all, that a clear, frank presentation of its problems goes farther than anything else to eradicate that suspicion which sometimes is directed at public utility corporations.

Necessities for Increases

While varying exigencies enter into different cases going before public service commissions, the necessity for asking permission to increase gas rates is based, generally speaking, on conditions common to the industry everywhere.

These conditions may be enumerated briefly as follows: First, the company has a constantly diminishing amount of gas to sell as a result of the steady exhaustion of its sources of supply. Second, the cost of distributing its gas per 1,000 feet to customers always is rising.

The reasons for the increasing costs are plain. They are grasped readily not only by public service commissioners, but by gas consumers, who are directly interested in the matter of rates.

First there is the fact that the gas company must push its frontiers farther and farther from the point of consumption in the never-ending search for fresh production. This involves the expense of laying new pipe lines and installing additional equipment, and it necessitates the construction of compressing stations, for there is not only the increased distance of transporting the gas to be taken into account, but there is also the fact that as each new field is tapped, the natural rock pressure begins to decrease. In other words, not only must the decrease in pressure resulting from transmission itself be overcome by resort to mechanical means, but so must the falling off in the force with which the gas originally pours from the ground.

One instance comes to mind in this connection in which a company spent $6,000,000 for an extension of its lines to a new field and the building of the necessary compression stations. The company calculated that it would take 15 years to pay for this extension out of the profits gained—15 years before it would obtain any return on its investment.

Rising Cost of Gas

It must be borne in mind, too, that the company must pay more from year to year for such gas as it buys from other producers, for the obvious reason that these latter, too, are affected by rising costs and must charge more.

Then there is the fact that although the company applying for new rates is selling less gas each year, the expense of distributing the gas that it does sell does not decrease, but on the contrary is likely to be greater. While the investment has grown, with its concomitant rise in interest and depreciation charges, it costs just as much as before—probably more—to maintain pipe lines and distributing systems and to meet the commercial expense of meter reading, billing and collecting.

Supervision and general office expense remain the same, or may even rise, as the system expands, although it is a noteworthy fact that natural gas companies have set themselves so earnestly to the task of effecting economies that they not only have prevented administration expenses from climbing to any serious degree, but sometimes have actually reduced them. The saving to gas consumers through efficient management in this field is important.

One of the two conditions named as common to the industry in making increased rates imperative from time to time was that companies have a diminishing supply of gas to sell from year to year. This diminution varies of course in different fields and with different companies. It is virtually an ever-existent condition, however. As a case in point, one company which sold 50,000,000,000 feet of gas in 1917, sold 25,000,000,000 feet in 1925. Thus it became necessary to charge twice as much for its product in 1925 as in 1917.

Facts Easily Understood

As a matter of fact in the case cited it would have been necessary to charge much more than twice the 1917 price to come out whole if it had not been for the fact that expenses had been kept down to a minimum by efficient management, improved machinery and greater amount of work per man. The force of employes was actually reduced by increased attention to selection of men, training them more carefully and attaining a better grade of supervision.

It is usually the case that a gas company sees its costs of production and distribution soar till the return on its invested capital is about to become too low for safety. Then with all the relevant facts and figures in hand it asks the public service commission in the State in which it operates for permission to raise its rates to a point that will yield a reasonable return.

There is no guesswork about it. The records show exactly what the company is paying for the gas it sells. They show what it receives from customers. They show the percentage of profit under the existing rates. And they generally show that unless the company is granted the right to charge more it will soon have to go out of business.

The case presented is so clear that as a rule fair-minded men agree at once that the proposed new rates are not only justifiable, but absolutely essential to continuance of the business. Nevertheless, it is a not uncommon practice for officials of a city affected to protest against granting of the new schedule of rates. Oftentimes this is done for semi-political reasons. The voters, or some of them, are made to feel that they have champions in office who will not allow their rights to be tampered with. This species of spoofing is harmless save to the extent that it has a tendency to foster needless suspicion because of the accusing attitude assumed by the complainants.

Rate Increase Hearings

In other cases a formal objection is filed, not because of any conviction that the proposed rates are unwarranted or because of a desire to "make the voter feel good," but from much the same motives that impel careful business men to have audits.

In this latter class of cases the gas company, knowing its cause it just and recognizing the motives of public policy that prompt the protest, co-operates cheerfully and fully in the matter of establishing whether or not it is entitled to the rates it asks. In the case of complaints based upon petty political considerations it usually feels that it can afford to smile and it presents its cause just as candidly and informatively as in the other instance.

For in both kinds of cases a gas company that is only asking for a square deal emerges from a rate hearing—no matter what or who made the hearing necessary—in a stronger position strategically than it was before. It has disarmed suspicion. It has laid its cards on the table. It has shown to everybody interested that its financial problem is basically of the same kind that attends any other business, from operating a peanut roaster up—its income must be sufficiently in excess of its outgo to insure a profit. Otherwise bankruptcy.

If a company is allowed to adopt a new schedule of rates without a hearing, many persons believe that something crooked is being covered up. Thus, under normally fair conditions a hearing is welcomed.

In many states if a gas company were to blunder in its statements of conditions or its figures, or were to make any false representations, the public service commission would impose penalties that would make it extremely difficult for the company to establish higher rates after that, no matter how genuinely they might be needed.

In a few states the regulations governing public service commissions are such as to cause gas companies and other public utility organizations to approach them with dread.

In West Virginia, for instance, a gas company first files a petition for a hearing on new rates proposed. Then the commission sets a date for the hearing and directs the company to notify its customers of the new rates contemplated and of the date of the hearing.

At the hearing the company must present complete testimony, giving its reasons for the petition and proving its right to adopt the new rates. Representatives of the company must present themselves for cross-examination by protestants, who also may present any counter testimony. It is declared to be a fact almost without exception that the hearing, which up to this point contains nothing of which an honest petitioner need fear, is continued from one date to another. Sometimes the hearing thus is dragged out for years, new testimony and counter testimony being presented.

Years Getting Decision

After the long drawn out hearing eventually comes to an end the mass of testimony is transcribed and a copy is sent to the protestants, who have 30 days in which to file a brief. After this the company is allowed 10 days in which to file a counter brief.

Then the commission has all the time it wants to arrive at a decision. It is said to be a rare occurrence for a West

NEW YORK STANDARD CONSOLIDATES ITS POSITION BY RECENT MERGERS

When Herbert L. Pratt finishes up the details of the merger of the Standard Oil Co. of New York and the General Petroleum Corp. he will have consolidated the New York's position as second only to the former parent New Jersey company among Standard Oil organizations in point of assets. Following on the heels of the acquisition of full control of the Magnolia Petroleum Co., the latest move by the New York company, emphasizes the active forces that are keeping probably the most unique and romantic oil organization in a leading position among petroleum companies of the world.

Anyone who has any contact with Mr. Pratt knows him as an extremely active man with a forceful but agreeable way of accomplishing the things he sets out to do. He has been president of the Standard Oil Co. of New York for two years, having succeeded Henry C. Folger, who is now chairman of the board.

Toward the close of last year the company acquired a full 100 per cent of the capital stock of the Magnolia Petroleum Co., which was originally organized by John D. Archbold, Mr. Folger and others. The New York company long held an interest in the company, which was increased after Mr. Archbold's death until, prior to the recent taking over of 100 per cent control, it amounted to 70 per cent.

Deducting the Magnolia stock carried on the New York company's books, and adding to its total assets the assets of the Magnolia and General Petroleum companies, the imposing total of $600,000,000 is shown for the combined company. In point of assets, therefore, the company probably ranks next to the Standard Oil Co. of New Jersey and the Royal Dutch-Shell combine.

The president of this company is in many respects the typical Standard Oil executive. His business interests have been almost solely within the company. He enjoys a wide acquaintance in the industry but is probably little known to

—Photo by Underwood & Underwood

Herbert L. Pratt

the rank and file. One reason for this is that he has made no oil speeches. He attends the annual meetings of the American Petroleum Institute, but except in board circles is seen but rarely heard. He is a director in the institute and has taken an active part in its deliberations.

Even in his numerous and wide affiliations in charitable and recreational activities, Mr. Pratt while taking a very

(Continued on Page 96)

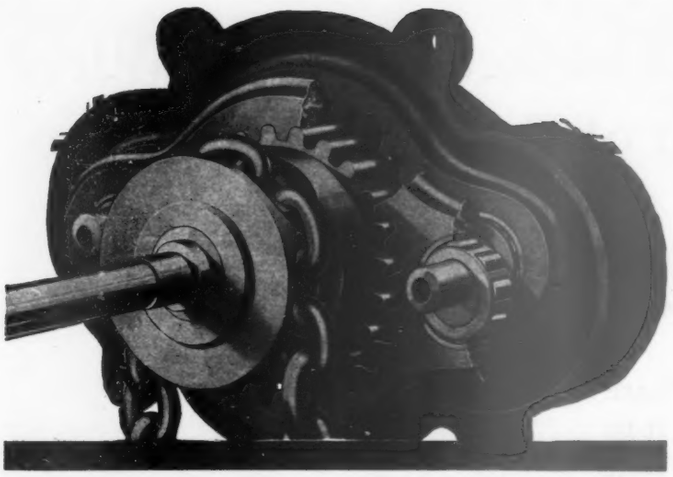
Vapor Phase Refining of Cracked Gasoline Wins Unqualified Endorsement of Petroleum Industry

THE great strides made by Vapor Phase Refining of cracked gasoline entitle it to rank as one of the most important recent developments in the petroleum industry.

The first unit was installed in the Barnsdall, Oklahoma, plant of Barnsdall Refineries, Inc., in October, 1924. At the present time (April 30, 1926) forty-three units have been installed or contracted for by the following companies:—

ARGENTINE GOVERNMENT OIL FIELDS, INC., LA PLATA, ARGENTINA.
BARNSDALL REFINERIES, INC., BARNSDALL, OKLAHOMA.
BARNSDALL REFINERIES, INC., OKMULGEE, OKLAHOMA.
COMPAGNIE BELGE DU GAZ CATALYTIQUE, BRUSSELS, BELGIUM.
KANOTEX REFINING COMPANY, ARKANSAS CITY, KANSAS.
LUBRITE REFINING COMPANY, EAST ST. LOUIS, ILLINOIS.
MARLAND REFINING COMPANY, PONCA CITY, OKLAHOMA.
McCOLL BROS., LTD., TORONTO, ONTARIO.
STANDARD OIL COMPANY OF NEW YORK, BROOKLYN, NEW YORK.
SUN OIL COMPANY, MARCUS HOOK, PENNSYLVANIA.
WHITE STAR REFINING COMPANY, WOOD RIVER, ILLINOIS.

THE GRAY PROCESSES CORPORATION
961-975 FRELINGHUYSEN AVENUE
NEWARK, N. J.



Inside Facts!

Before you invest in an ordinary hoist investigate the *inside facts* of CYCLONE HOISTS. You will find that CYCLONE HOISTS are different and that there are good *reasons why* they are different. For instance—

CYCLONE HOISTS operate on the exclusive gyrating principle whereby double eccentric shafts impart a *gyrating* motion to two yokes which mesh with the lift gear at directly opposite points. This principle keeps more than twice the usual number of lift gear teeth always in mesh, assuring smooth operation with a minimum of vibration and utmost durability. *No other hoists are like that!*

CYCLONE HOISTS are built on the exclusive single unit principle whereby sizes are increased by increasing each part, thereby maintaining the same simple, compact construction in all capacities. *No other hoists are like that!*

Compare every other feature of CYCLONE HOISTS with ordinary hoists and let your judgment be your guide. To make it easy for you to investigate before you invest, CYCLONE HOISTS will be sent for a 30 or 60-day FREE TRIAL. Fair offer, isn't it?

Sold by Leading Oil Well Supply Houses

THE CHISHOLM-MOORE MFG. CO.
Cleveland, Ohio

Branches: New York Chicago Pittsburgh

"Cyclone" Hoists

High-speed, smooth operation, and durability have established a world-wide reputation for "CYCLONE" HOISTS. Capacities ¼ to 12 tons. Illustration at left.

"Matchless" Trolleys

Easiest to start—easiest to keep going — these trolleys have exclusive features of construction which never fail to win the approval of those *who know the best when they see it.* The view at the right illustrates a "Matchless" Trolley fitted with a "Cyclone" Hoist, an unbeatable combination.

CHISHOLM-MOORE
OVERHEAD HOISTS CRANES TROLLEYS **TRACK SYSTEMS**

Virginia public service commission to give a decision in a case while the State Legislature is in session.

The result of it all is that it may be years from the time a rate application is filed until the commission hands down its finding. And when the company does receive the commission's permission to raise its rates, the higher rates in the meantime have become utterly inadequate to meet mounting costs.

A canvass of natural gas companies throughout the United States probably would show that a majorty of them do not object to rate regulation as it is practiced by public service commissions, composed of intelligent, fair-minded men, free from political dominance.

The belief is held that no price charged for any commodity anywhere is likely to be more nearly right and just than that charged for natural gas under public service commission laws.

If the price is too high, the people will quit buying the gas, for notwithstanding the amount of loose talk about "gas monopolies," the fact is there is keen competition. Oil, coal and electricity are too readily available for both domestic and industrial use to make it advisable for any gas company to attempt charging exorbitant rates even if it could do that in spite of the public service commission barriers.

If the price is too low the return on capital invested is wiped out.

Of necessity the price must be fixed midway between these two extremes.

NEW YORK STANDARD CONSOLIDATES POSITION

(Continued from Page 92)

energetic part does so quietly, and it is not on record that he has made many public speeches.

Pratt Oil Works Nucleus

The Standard Oil Co. of New York was organized in 1882. But long before that time—in fact, in the early days after the discovery of oil—Charles Pratt, father of the present president of the company, had established an oil converting plant in Brooklyn, N. Y., on the East River. From his office on the eleventh floor of the new Standard Oil building overlooking New York Bay and the East River, Mr. Pratt can see the Pratt Oil Works where under the direction of his father Pratt's Astral Oil was made.

At the time John D. Rockefeller began to develop his enterprises in the east, Pratt's Astral Oil was widely known throughout the country and in many foreign countries, and Mr. Pratt was persuaded to join with Mr. Rockefeller. The Pratt Oil Works was the nucleus upon which the Standard Oil Co. of New York was formed.

Since its organization the company has only had three presidents, all bearing names famous in Standard Oil annals. William Rockefeller, brother of John D. Rockefeller, headed the company for many years and retired at the time of the dissolution of the Standard Oil. He was succeeded by Mr. Folger who had been a director of the old Standard Oil Co. and a member of the executive committee. Mr. Folger, as chairman of the board, is still active in the company's affairs.

Mr. Pratt has been associated with the Standard Oil since his graduation from college. His first step in the business world led to a clerkship with the Bergen Point Chemical Works. There he gained the rudimentary knowledge of trade that was to prove of advantage in the years to come. He next became assistant to the manager of the Pratt Works and the Queens County Works, and within a few years assumed direction of the two plants. He held that post for some time.

He was called to headquarters at 26 Broadway and became a vice president in 1912 after the dissolution, having previously been director in charge of manufacturing. His wide experience in refining and marketing is given full scope in the operations of the company which are varied and world-embracing.

Mr. Pratt often goes on extensive trips abroad in connection with the business of the company, combining such trips with pleasure. In February he returned from a three months' trip to Calcutta, where he visited his son, H. P. Pratt, Jr., who is in the employ of the company there. He was accompanied by Mrs. Pratt. Two years ago he made a trip to Japan, China and India.

A native of Brooklyn, where he was born November 21, 1871, Mr. Pratt is a member of a family long prominent in that place. Another prominent Brooklyn family identified with the Standard Oil organization is the Bedford family.

Mr. Pratt attended Brooklyn schools and then entered Amherst College. He was graduated in the famous class of 1895. In this class were President Coolidge, Dwight W. Morrow and others who have reached distinction.

An Active Man

Mr. Pratt has been referred to as an active man. In his fifty-fifth year he looks considerably younger. His cheerfulness is something his associates talk about, and they miss him when he is away. He keeps fit by going in for several forms of exercise and sport, all with enthusiasm He has been a tennis enthusiast and still plays on occasion. He rides and plays golf and squash. He uses the Standard Oil gymnasium when he gets a chance. About 5 feet 6 inches in height, he is slender and very active; moves rapidly and takes his relaxation with a pipe.

He is a club man and a member of numerous social organizations. Mr. Pratt, like the late A. C. Bedford, is prominent in Y. M. C. A. activities. He reorganized the canteen service of the organization abroad during the war, and he serves on important committees of the Y. M. C. A. His interest in athletic training for youth is manifested in his support of company athletics, and he is also a vice president of the Springfield Training College which trains athletic directors for Y. M. C. A. and school work.

Mr. Pratt's hobby is old American history. He has one of the finest collections of the work of early American artists. His country home at Glen Cove, L. I., and his city home in New York have portraits of early American statesmen painted by Gilbert Stewart and others. He also has a fine collection of old New York prints and colonial antiques.

His partiality for the colonial is manifest in his office which has an old pine interior taken from an old English house in the Soho Square section of London. The furnishings include several old tables, a ship model and an old chest. Over the carved pine mantel hangs a rare painting of St. Paul's Church and the Broadway Stages done by Hugh Reinagle in 1831. A print of the same hangs on the wall as well as other prints of early New York from Mr. Pratt's collection.

PRIZE OIL BURNING BOAT

The steamship West Erral, one of a fleet of over 300 vessels operated by the Shipping Board, is announced as the prize winning ship in the matter of fuel economy, according to data available from tests made by the board's fuel conservation committee. On her record breaking voyage she made an average speed of 10½ knots and burned 1.17 pounds of oil per horsepower. This efficiency is claimed to be largely due to the ability of the boilers to absorb so much of the heat generated by the oil fuel.

ITALIAN OIL MONOPOLY

Following, it is stated, the example of the Anglo-Persian Co., the Italian Government proposes to form a mixed oil company in which the state shall hold 60 per cent, and two large insurance corporations 40 per cent between them.

CZECH TAX ON OIL

The Czechoslovak Ministry of Finance has passed an order which replaces with a lump sum tax of 5 per cent of the invoice value the 2 per cent turnover tax on mineral, naphtha and allied products, including candles. In the case of imported commodities this tax will be collected once for all by the customs authorities.

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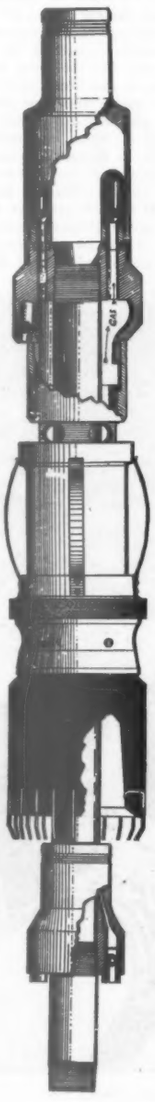

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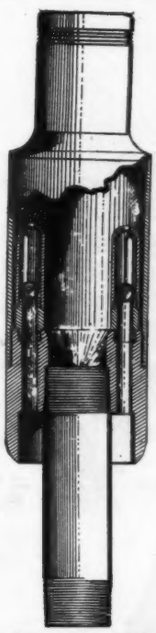

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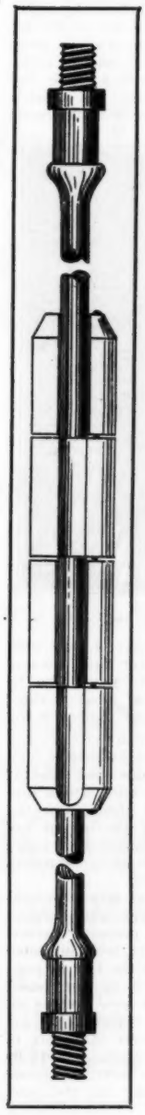

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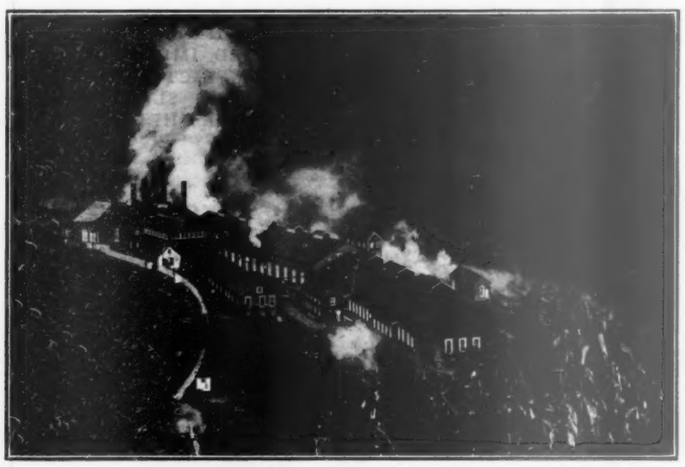
Extends West Virginia's Gas Territory

Remarkable Engineering Feat of Hope Natural Gas Company in Carrying Gas Line Through Hills of the State

NEW MARTINSVILLE, W. Va., May 17.—With its resources in northern and central West Virginia rapidly nearing exhaustion, the Hope Natural Gas Co. of Pittsburgh in the fall of 1924 found itself gazing at the two horns of as disconcerting a dilemma as ever confronted an institution dedicated to the job of appeasing a people's clamor for gas.

One horn was that of going out of business. That was unthinkable.

The other was that of throwing a pipe line in a southerly direction into Boone County, where lay the only gas field in that region that could solve the Hope Company's problem. Between the Gilmer County and Boone County fields lay miles of wild, rough, mountainous country with scarcely a level stretch of a quarter of a mile in the whole distance. More than 70 mountains, some of them one and a half times as high as the Woolworth building in New York, not to mention innumerable chasms and walls of solid rock, would have to be crossed.



Compressor station in West Virginia hills, Hope Natural Gas Co.

Men old in the business said the engineering and mechanical impediments involved made the undertaking impossible. But H. C. Cooper, chief engineer of the company, after a survey of the situation, expressed the belief that the thing could be accomplished and declared his willingness to try it. At an epochal meeting of the board of directors in the first week of September, 1924, Mr. Cooper was directed to go ahead.

The result of that meeting was an engineering achievement which, according to well-informed men, has no parallel in the history of the natural gas industry. They base their opinion on the magnitude of the difficulties overcome and the almost unbelievable time in which the feat was performed.

Until the next January 1 Mr. Cooper devoted virtually his every waking moment to perfecting plans for the colossal task he had undertaken, much as a military commander maps out the details of a major offensive in time of war.

Formidable Task

First surveys had to be made. On the heels of the surveyors came men who negotiated for the purchase of right of way across 540 farms and land tracts, involving a vast amount of legal work. At the same time steel mills were called on to provide great quantities of pipe and couplings in a hurry—22,000 tons of them, 44,000,000 pounds. Equipment and giant engines for two compressor stations were designed and ordered manufactured. Countless other details had to be thought out and prepared for in advance.

In Boone and contiguous counties, large quantities of gas were being produced and virtually all of it was being used in making carbon black, which was sold to manufacturers of printing ink and automobile tires. Contracts were made by the Hope Company with these producers to take their gas for a term of years at a price which made it more profitable than the manufacture of carbon black. Under the contracts the company was required to begin taking the gas on November 1, 1925. Actual work on construction of the line began January 1. This allowed 10 months for the completion of a job for which the ordinary contractor would want a year if he had to traverse level country only.

Eleven distinct operations were involved in building the line. First came the civil engineering crews who surveyed the route. Next the right of way men visited farmers and other land owners and signed agreements to pay $1 to $2 a rod for the privilege of crossing their ground and to pay for any damage done.

Then clearing crews cut away trees and brush. Following them teamsters and stringers hauled the pipe and laid it along the route marked out. Ditch diggers came next. After them came the "benders," men who by the use of fire for heating and great clamps bent joints of pipe so that they would conform to the contour of the ground.

Seventh came crews of men who connected the joints of pipe and dropped them into the ditches prepared beforehand. Then came testers, who subjected each fresh mile or so of the line to powerful pressure to insure against leaks. It might be pointed out here that as all gas had to be paid for according to meters installed at the source of supply in the Boone County district, the Hope Company would have to meet any losses incurred through leakage on the way north.

After the testers came the "fillers-in," who covered the pipe by replacing the earth cast up in making the ditches. The pipe was buried at an average depth of 40 inches. Later dressers trailed the "fillers-in" to correct any imperfections left in the filling-in process or resulting from the action of the weather. Last came right of way men on a second visit to make any settlements necessary with property owners.

Difficulties Encountered

The task which confronted the surveying crews was unique and unprecedentedly formidable. In some cases the conformation of the territory was such that in order to follow the route marked by the surveyors it was necessary to haul the pipe over an actual distance of 10 miles in order to effect 1 mile of straight headway. It was imperative that none of the line should be laid laterally along a mountainside, for to do that would be to invite "slips" in later months. This danger of landslides made ridge climbing necessary wherever valleys could not be followed—and often they could not.

The teamsters and stringers had a job that called for patience, ingenuity and brawn. Much of the pipe had to be hauled 20 miles from the nearest railroad, one 20-foot length at a time.

The digging of the ditch was a slow job, thickly strewn with difficulties. Oftentimes the route lay down a steep hillside and vast quantities of dynamite were used in blasing a way through rock.

The pipe laying crews often were compelled to resort to block and tackle to get the pipe lengths into place. An idea of the difficulties they faced may be conveyed by citing just one instance where engineering and mechanical acrobatics had to be performed.

From the summit of the Cabin Creek Hill, near Charleston, the capital of West Virginia, the pipe line takes an almost perpendicular dive of 800 feet to the Kanawha River below. It does this only to climb at once the face of another mountainside. Seventy mountains in the territory traversed created the necessity of just that many sharp dips and equally sharp ascents.

Noteworthy is the fact that notwithstanding the hazardous character of a large amount of the work performed there were no serious accidents.

In stringing the pipe on one of these declivities the joints were assembled one at a time by means of block and tackle from the bottom of the grade up to the top. Dresser couplings were used.

Oxen Were Used

The first 120 miles of pipe from where the line starts in Gilmer County to the Kanawha River southward is 20-inch. From that point to Madison, 25 miles farther on in Boone County, 16-inch pipe is used. Tractors and motors that make pipe line contruction comparatively simple in level country were useless here. Several days sometimes were required to transport one joint of pipe to its place in the line. One of these 20-inch joints weighed about 1,500 pounds. In some cases oxen instead of horses were used. More than 60,000 joints of pipe and as many couplings were transported in the most primitive manner to the greater part of the line because there was no other way to get them there.

At the same time the line was being laid two of the most modern compressor stations were being installed, one on the Elk River, in Kanawha County, and one further south on the Kanawha River in the same county. During the last winter 60,000,000 feet of gas was sent daily on its way north through these compressor stations. These two stations were named after distinguished sons of West Virginia, the southermost one, on the Kanawha River, after Stonewall Jackson, the Confederate general, and the one on the Elk River after John J. Cornwell, who served as governor. The former develops 6,000 horsepower and the latter 5,000. Both are operated by steam power, thus utilizing coal and effecting a saving in natural gas.

Hope Natural Gas Co. crew on Boone County job.

The Stonewall Jackson station is a "two-stage" one. Gas enters it at low pressure from the nearby wells. The first compressing operation raises the pressure to 50 pounds. The second operation, receiving the gas at the intake pressure of

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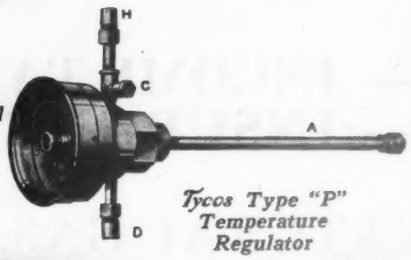

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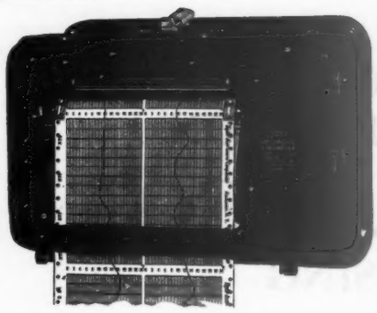

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50 pounds, raises the pressure to 300 pounds.

In forcing the gas northward through the main transmission line to the company's compressor station in Hastings, W. Va., which is a unit of the company's original field equipment, this pressure of 300 pounds undergoes a reduction to 90 pounds. At the Hastings station, the process or restoring the pressure this time to 315 pounds, is repeated and the gas is sent on from that point to the lines of allied distributing companies, the Hope company being primarily a producing concern only.

Race Against Time

Throughout the whole operation of building 145 miles of pipe line under staggering difficulties and establishing two up-to-date compressor stations—the entire job to be completed within 10 months—there was no excitement. It was a race against time, but it was a race executed with orderly precision.

The workmen employed along the line were divided into four camps, which had to be tented, fed and moved like an army. The force of workers, while rarely falling below 1,000—250 to each of the four camps—grew at times to almost 1,800.

The various foremen, who were under the direct supervision of Superintendent John Hastings, had nerve-racking situations to deal with. All the laborers were white and most of them were native West Virginians. After these men had worked a week or two many would drop off and stay off till they had spent the money earned. In some cases they would not come back at all. There was the ever-present problem of keeping the ranks of workmen filled. These men were paid $4.50 to $5 a day as laborers, working 9 hours a day. Rarely did a foreman have the same force two days in succession.

Sanitary provisions were under the direction of Dr. J. C. Weidman, chief physician of the Hope Company. As a result of watchful care in this department no epidemics of any sort appeared. Safety crews trained to expertness in cases of accidents had few victims to handle. The drinking water was examined closely at all times and sanitation laws were observed closely in kitchen, sleeping quarters, etc.

In general charge of operations were J. J. Evans as general superintendent and Mr. Cooper, as chief engineer. These two made frequent reports from the field to John B. Corrin, vice president of the company, in his office in Pittsburgh.

Four Days Ahead

On October 27, 1925, four days before the date named in the company's contracts with the leaseholders, gas was turned into the Stonewall Jackson and John J. Cornwell compressor stations and sent north to be relayed from the old compressor station at Hastings.

One of the most brilliant feats of modern engineering and executive accomplishment had been completed, and thousands of gas consumers in Ohio and Pennsylvania, who had been threatened with a shortage, were now assured of a supply for years to come.

"What man has done man can do" may have had a useful inspirational place in the old economy, but the Hope Natural Gas Co. effaced the ancient adage and wrote a new one, "What man sets out to do he can do, whether anybody else ever did it or not."

The line to Boone County and the two new compressor stations cost $6,000,000. It will take 15 years for the company to reimburse itself for this outlay.

"Did you have a celebration in honor of your triumph after finishing the job?" Vice President Corrin was asked afterward.

"Oh, no," that official replied slowly, and a bit wonderingly. "We had fresh problems to tackle."

CHARGE SUBSTITUTION OF INFERIOR OILS

(Continued from Page 89)

being substituted at filling stations where the names and trade-marks of high grade oils are displayed to the motorist.

Another practice uncovered was that of the purchase of oil in bulk on specification from many refineries, the receivers of this oil, knowing whence it originated, and not being made clearly to understand that it is not a standard refinery product, selling it as the trade-marked oil of that particular refiner.

Majority Honest

The results of the investigation are not intended to continue a blanket indictment of all filling stations and garages. The belief is held that the majority of men engaged in the business of supplying the needs of motorists are men of integrity and principle. They are doing an honest business in an honest way and are entitled to honest consideration from all. The cause for deliberate substituting on the part of the filling station is, primarily, the financial gain to be secured. It is pointed out that the comparative ease of practicing this fraud, and the slight possibility of detection can easily prove too strong a temptation for the man not adverse to "putting it over" if possible.

Another interesting point brought out is that combined with this is the fact that the feelings of the proprietors of many filling stations toward the oil companies is not entirely amicable. The chief contributing factor seems to be price and market conditions, and the prevailing notion that the oil companies make no decisive effort to back up and support those who sell their branded products commensurate with that afforded dealers in other commodities, as for example the battery manufacturers to ther service stations.

It is the opinion of the National Better Business Bureau that the evil of motor oil substitution can be materially curbed. With few exceptions it is believed that the direct and contributing causes of oil substitution can be removed only by adequate legislation and education. Methods are suggested for carrying on a campaign against substitution.

Laxity of Law

The investigation brought out that in most communities legislation to afford prompt support to punish substitutors is weak and that there is a tendency on the part of some prosecuting attorneys to hesitate to prosecute. This feeling is evidenced because of the weak legislation and the opinions of the prosecuting attorneys that the cases are not very important.

Several ordinances exist for the purpose of curtailing substitution from which results have been obtained. In Los Angeles, an ordinance has been enacted, known as Bill 6107, Ordinance 5691, regulating the sale of any oil represented as lubricating oil for the cylinders of internal combustion engines. The ordinance is similar to the San Francisco ordinance on the same subject.

Three recent convictions have been obtained under the Los Angeles ordinance. A somewhat similar ordinance exists in Portland, Ore.

California has a state law relative to substitution. Study of these laws may suggest a model statute which could be presented to the Legislatures of the several states.

A report of a recent investigation by the Fresno, Calif., Better Business Bureau shows that of 21 stations surveyed, 9 were found to be substituting oil other than that advertised for sale at their places of business, and 5 others were found which did not properly label their oil containers in accordance with the new state law.

All of those violating the law were arrested under Section 353-A which covers improper labeling and Section 351-A which covers motor oil substitution of the Penal Code of the State of California.

In the five cases arrested for violating Section 353-2, each case was dismissed after the defendant came to the office of the bureau and gave his assurance that the labeling of his containers would be properly done in the future. In the nine cases of motor oil substitution, the bureau insisted on trials of those who did not plead guilty. In seven of these cases there were convictions with fines ranging from $150 for the first case down to $50 for those pleading guilty.

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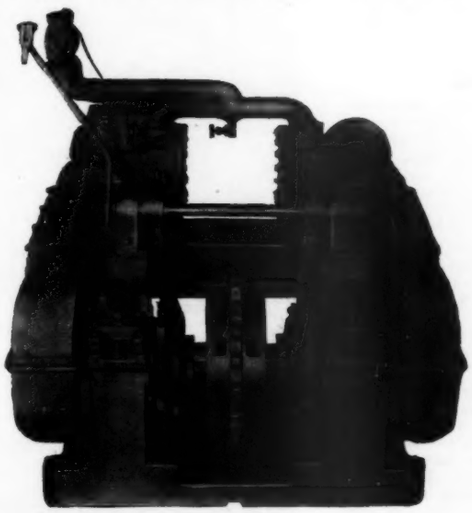

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Problems of the Eastern Gas Fields

How the Equitable Gas Co. is Meeting Difficulties of Supplying the Great Population of the Pittsburgh District

PITTSBURGH, Pa., May 17.—Not for the faint of heart or the myopic of vision is the business of wheedling natural gas from the earth's inards and conveying it by devious ways from regions oftimes wild and almost inaccessible to homes where the conveniences, comforts and redinements it has made possible have come to be taken as a matter of course.

Back of the countless tiny jets that burst into warm blue flame at the touch of a match lie stories of adventurous pioneering, hardships, grit, disappointments, victories, splendid faith in the future.

But to attempt to recount the achievements of a modern gas company is almost inevitably to settle down into a thicket of prosaic facts and statistics. For net results are preserved in business offices, while romance fades; and the chief actors in industrial exploits are usually too close to their jobs to see anything epical in them.

When Columbus got back to Spain and admiring friends exclaimed, "Great work, Chris!" he may have replied, "Why, really no, old top. There wasn't much to it after we once sighted land."

The history of expansion, of meeting an ever-widening demand, in the natural gas industry has been one of overcoming problems unlike any in previous undertakings. There was no chart to guide, no precedent. There had to be ingenuity, patience, daring, financial resources—yes, and a rabbit foot, acquired according to the well-known specifications, for notwithstanding the help that science has lent, it is a cheerless fact that of every four gas wells drilled, one is "dry."

Contrast in Maps

Two red-veined maps on an office wall of the Equitable Gas Co. in Pittsburgh present in striking fashion the growth of that company's business from 1886 (it was just two years old then) to 1926. And the Equitable may well be taken to illustrate the development of this great business as a whole, for its experiences have been typical.

On one map the red lines are short and few. The area covered by them is only about 25 miles long at its greatest dimension. They lie for the most part between Pittsburgh and the Murrysville district in the adjoining county of Westmoreland.

On the other map is a bewildering network of red lines extending from a point 75 miles north and east of this city to about 150 miles south of it, in West Virginia. East and west the lines cover a strip about 75 miles wide. Below the southernmost reach of these red lines, the company gets large quantities of gas from small independent concerns, making the territory actually drawn on for its supplies about 325 miles long by 75 miles wide. In this 5,000 square miles of territory the company obtained in 1925 28,000,000,000 cubic feet of gas which it transported through 3,700 miles of transmission and distribution mains (represented by the red lines on the map) to its 163,000 patrons in the Pittsburgh district.

Far-visioned as were the men who figured in the humble beginnings of this company, it is safe to say that not one of them dreamed of the gigantic organization for which they were laying the foundation. These men included George Westinghouse, later to become head of vast electrical manufacturing enterprises; Robert Pitcairn, whose name is linked with that of the Pennsylvania railroad and for whom a town on that line near Pittsburgh is named; John Dalzell, for many years a leading figure in the national House of Representatives; John Caldwell, C. H. Jackson, T. A. Gillespie and H. H. Westinghouse, whose names are familiar to the older residents of Pittsburgh.

Organized at Meadville

The Philadelphia Co., which since has become the parent company of the Equitable and other important public utility enterprises in the Pittsburgh district, was organized in 1884, with home offices in Meadville, Pa. The owners found themselves in financial and other difficulties from the start. George Westinghouse, ascertaining the situation, laid plans to take over the company in order to fulfill his dreams of establishing a gas-distributing system in Pittsburgh.

With his associates Westinghouse acquired the charter of the Philadelphia Co. from the Meadville men in 1884, when the entire capital stock of $100,000 was purchased and the company moved to Pittsburgh. Later the Equitable Gas Co. was organized to operate the gas properties of the Philadelphia Co.

In its primitive days of 40 years ago the Equitable had two lines of pipe from the Murrysville Field, 15 miles east of Pittsburgh, one a 10-inch line and the other a 6-inch line, the latter purchased from the Penn Gas Fuel Co. These were added to in 1889 by the laying of a 36-inch line, which marked an epoch in the construction of gas mains. This big pipe was composed of boiler plate, riveted in sections. Lines were extended from this 36-inch main to the Grapeville and North Washington fields nearby.

A year later the Bellevernon Field, 25 miles south of Pittsburgh, was developed and two 16-inch lines were laid to it. The following year a 36-inch line was laid to the new Hickory Field.

But with all this expansion—marvelous it seemed in that day—the demand for the new time and labor-saving fuel and illuminant outstripped the supply. In the early nineties the requirements had assumed such volume that the owners of the company seriously considered the installation of an artificial gas plant to supplement the natural supply. This idea was abandoned, however, when the larger fields in Washington and Greene Counties in Pennsylvania were opened up and the Wetzel County Field in West Virginia was discovered.

"Big Moses" Well

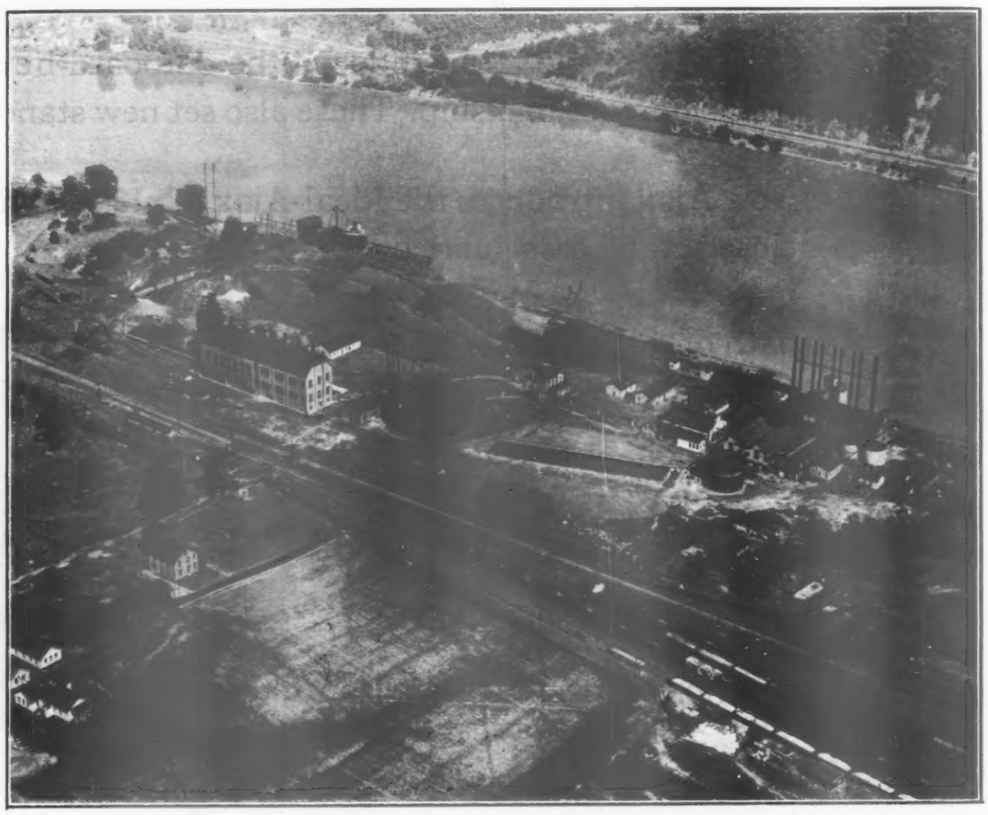
In 1895 one of the biggest gas wells ever drilled in West Virginia sent a thrill through the scattered army of explorers who by this time were seeking fortunes in gas. This was the "Big Moses" well, which started producing at the rate of 10,000,000 cubic feet a day. The pressure was so enormous that it was several months before the roaring outflow of gas could be brought under control by specially devised valves and fittings, which drew upon the inventive genius of the owners. Incidentally, that well is still sending gas into the Equitable company's mains, 31 years later.

The striking of this sensational well was the signal for the company to enter the West Virginia Field and in the same year it extended a 20-inch and a 16-inch line from the 16-inch line at Bellevernon through Washington and Greene Counties in Pennsylvania to Wetzel County, West Virginia, connecting the big well.

When the problem of satisfying the mounting demands of Pittsburgh for gas seemed in a fair way toward solution fresh trouble appeared. The line which the company had laid into West Virginia was of the converse-bowl lead-joint type and it soon was discovered that large quantities of gas from the "Big Moses" were being lost through leakages at these joints. Eventually the whole line was lifted and then relaid in the same ditch, rubber joint couplers being used in place of the converse bowl and lead joints.

Drop in Pressure

With the extension of the company's line into West Virginia there arose in time one of the many difficulties that had to be overcome—that of maintaining sufficient pressure in the mains to force the gas from distant sources of production to the point of consumption. An idea of the problem involved may be obtained from the fact that in 1905 the average natural rock pressure of the 100 gas wells operated by the company at that time was 691 pounds to the square inch. Through exhaustion of this pent-up force beneath the earth's crust by withdrawal of gas the average of 691 pounds has dropped to 150 pounds from the company's 1,750 wells in all fields in 1926. The rock pressure of the first mentioned 100 wells, or rather such of them as are still producing, has of course fallen almost to the vanishing point.



Elrama gas plant near Pittsburgh, Pa., for making artificial gas to supplement supply in winter.

There was not only the problem of decreasing rock pressure to meet, but also the problem of compensating for the loss of initial pressure in the long pipe lines. Every time the company's system of lines reached out to new wells at more distant points the loss of pressure in the pipes became more serious.

To meet this problem gas-compressing stations were introduced. The purpose of these stations is to compress the gas from the pressure in the field lines to one high enough to cause it to flow through the transmission lines to Pittsburgh. Beginning with one compressing station the Equitable company installed additional ones from time as it moved its field of operations farther and farther away.

Since its organization the Equitable has installed 37 of these stations, but

(Continued on Page 136)

The Holmes-Manley *Cracking* Process

Long runs are customary with this process, due largely to minimum coke formation, the average of all 1925 operations being less than 65/100 of 1% in stills, working and storage tanks.

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and its subsidiary and associated companies join in a welcome to the delegates to the Annual Convention of the Natural Gas Association of America.

Indian Territory Illuminating Oil Company

Bartlesville, -:- -:- Okla.

Mexican Shipments Two Million Barrels More During March

By George Blardone

Mexican Bureau, The Oil and Gas Journal

TAMPICO, Mex., May 15.—Shipments of petroleum from Mexican ports of primary clearance during the month of March totaled 8,820,699 bbls., an increase of practically 2,000,000 bbls. over the volume dispatched during the month of February, (February, 6,876,098). The decrease from the movement in March, 1925, however, totaled 2,602,276 bbls.

The heavier oils of the northern fields in the movement last month approximated 7,000,000 bbls., the remainder being credited to the lighter oils of the south fields.

The movement in detail follows:

From Tampico

By Huasteca Petroleum Co.

Mar	Rig	Vessel and destination—	Barrels
1	Ss.	Nora, New York	*77,412
1	Ss.	Inverarder, Lizard f/o	*48,434
2	Ss.	Cape Henlopen, New York	*65,742
4	Ss.	Montana, Houston	*66,283
4	Ss.	S. M. Spalding, New Orleans	68,744
5	Ss.	O. D. Bennett, Tampa	†50,723
5	Ss.	Harold Walker, Boston	†67,771
6	Ss.	Mirlo, Panama	*66,870
7	Ss.	Elisha Walker, New York	*68,079
8	Ss.	F. H. Wickett, Providence	*77,320
8	Ss.	W. L. Stead, Baltimore	†72,817
9	Ss.	Cerro Ebano, New York	*78,501
10	Ss.	Mantilla, Portland	*53,373
11	Ss.	E. L. Doheny, Boston	*61,361
12	Ss.	Carrabulle, New York	*42,642
13	Ss.	Baldhill, Mobile	*50,025
13	Ss.	I. C. White, Providence	*68,838
14	Ss.	Montana, Boston	*62,709
15	Ss.	S. M. Spalding, New Orleans	*68,100
16	Ss.	Wm. H. Doheny, Portland	*65,323
17	Ss.	Norman Bridge, Tampa	*41,839
17	Ss.	Dean Emery, Baltimore	68,024
17	Ss.	C. E. Harwood, Miami and Jacksonville	†34,442
19	Ss.	H. G. Wylie, Jacksonville	*41,009
20	Ss.	C. A. Canfield, Boston	*61,305
20	Ss.	Agwiworld, New York	*70,310
20	Ss.	O. D. Bennett, New York	†52,487
21	Ss.	Meline, New York	*62,189
22	Ss.	Nora, Galveston	*78,823
23	Ss.	F. R. Kellogg, New York	*62,961
24	Ss.	Dist. Columbia, New York	*67,326
26	Ss.	Inveravon, Lizard f/o	*56,677
26	Ss.	Wm. Green, Houston	*72,060
26	Ss.	Baldhill, Lizard f/o	*58,908
27	Ss.	Mirlo, Philadelphia	63,820
28	Ss.	P. H. Harwood, Providence	*66,746
28	Ss.	Norman Bridge, Jacksonville	*41,149
28	Ss.	Inverurie, Lizard f/o	*58,380
29	Ss.	Invergordon, Lizard f/o	*56,621
30	Ss.	Nora, New York	*78,122
31	Ss.	G. G. Henry, Boston	*65,670
31	Ss.	F. K. Lane, Boston and New York	†76,836
		Coastwise deliveries	*94,838
		Coastwise deliveries	†32,920
		Bunker deliveries	66,046
		Total	2,810,275

By Transcontinental Petroleum Co.

3	Ss.	Baldhill, Baton Rouge	59,019
4	Ss.	Winifred, Banes, Cuba	17,017
5	Ss.	Glenpool, Key West	43,726
5	Ss.	Agwilake, Baltimore	79,993
5	Ss.	Trontolite, New York	34,417
5	Ss.	Imlay, Charleston	64,767
5	Ss.	Trontolite, New York	†31,576
6	Ss.	Alpha, New York	59,264
6	Ss.	Agwihavre, New York	80,025
6	Ss.	Mary Luckenbach, Port Tampa	*47,883
7	Ss.	Beta, Charleston	5,599
7	Ss.	Buiko, Romana, D. R.	16,241
7	Ss.	T. H. Wheeler, Jacksonville	51,326
8	Ss.	Halsey, New York	69,426
11	Ss.	Montrolite, Baltimore	99,515
13	Ss.	Clement Smith, New York	69,003
14	Ss.	Ardmore, New York	78,067
15	Ss.	Agwimex, Charleston	80,199
15	Ss.	Victolite, New York	73,104
15	Ss.	Victolite, New York	†33,922
16	Ss.	Mugoton, Porto Rico ports	*66,894
17	Ss.	Mary Luckenbach, Boqueon and Havana	50,102
17	Ss.	Caloric, New York	63,403
18	Ss.	Calgarolite, Baltimore	82,430
18	Ss.	Ontariolite, Baltimore	82,078
19	Ss.	Malacca, New York	73,057
20	Ss.	T. H. Wheeler, Baton Rouge	64,552
22	Ss.	Hagan, New York	61,025
23	Ss.	Nelson, New York	37,778
23	Ss.	Glenpool, Bourqueron and Cienfuegos	52,083
23	Ss.	Winifred, Banes, Cuba	17,132
24	Ss.	Trontolite, Baltimore	67,406
24	Ss.	Varongur, New York	78,574
24	Ss.	Agwihavre, Charleston	80,664
25	Ss.	Satanta, New York	42,790
28	Ss.	Priscilla, Baton Rouge	64,396
29	Ss.	Agwilake, Charleston	83,819
29	Ss.	Clement Smith, New York	68,248
29	Ss.	Albertolite, Baltimore	95,415
30	Ss.	Matinicock, New York	77,333
30	Ss.	Agwimex, Baltimore	79,884
		Bunker deliveries	121,765
		Total	2,593,915

By Mexican Eagle Oil Co., Ltd

3	Ss.	San Triso, Nassau f/o	*53,918
4	Ss.	San Ugon, Nassau f/o	†38,113
4	Ss.	San Leonardo, Nassau f/o.	*46,193
6	Ss.	San Zotico, Key West	*52,746
16	Ss.	L. J. Drake, Jacksonville	*55,276
16	Ss.	San Lamberto, Key West	*56,976
18	Ss.	San Tiburcio, Valparaiso Buenos Aires	†64,249
19	Ss.	San Fraterno, Nassau f/o.	*101,746
20	Ss.	San Manuel, Nassau f/o	†38,594
20	Ss.	Pioneer, Key West	*48,576
20	Ss.	North Pacific, South America	†39,356
22	Ss.	San Quirino, Buenos Aires Rio, etc.	†64,122
30	Ss.	T. H. Wheeler, Key West	*51,547
31	Ss.	San Zotico, Mariel, Cuba	*51,779
31	Ss.	Kenmaro, Brazil ports	†26,666
31	Ss.	San Leon, Key West	*57,620
		Coastwise deliveries	*74,722
		Coastwise deliveries	†28,897
		Bunker deliveries	70,870
		Total	1,012,966

By Mexican Sinclair Petroleum Corp.

3	Ss.	Gene Crawley, New Orleans	31,152
6	Ss.	Albert E. Watts, Havana	71,908
6	Ss.	Madrono, Cienfuegos	55,884
11	Ss.	E. V. R. Thayer, New Orleans	69,344
13	Ss.	Mirita, New Orleans	55,609
13	Ss.	Gene Crawley, Puerto Barrios, C. A.	31,086
14	Ss.	Harry Farnum, Nuevitas	31,319
18	Ss.	A. E. Watts, Matanzas	72,834
18	Ss.	Madrono, Belic-Cienfuegos	55,013
20	Ss.	E. V. R. Thayer, New Orleans	66,806
20	Ss.	W. L. Connelly, New Orleans	29,857
26	Ss.	Mirita, Nuevitas-Tarafa	55,810
29	Ss.	Gene Crawley, Cienfuegos	29,794
29	Ss.	A. E. Watts, New Orleans	69,839
30	Ss.	Harry Farnum, Cienfuegos	29,800
		Bunker deliveries	20,416
		Total	776,471

By Cia Mexicana Holandesa La Corona, S. A. (Royal Dutch Shell)

1	Ss.	Cape Cod, Philadelphia	65,052
3	Ss.	Davanger, Nassau f/o	59,175
4	Ss.	Maricopa, Nassau f/o	58,833
7	Ss.	Occidental, Port Arthur	63,732
13	Ss.	Trophon, Havana	*31,933
14	Ss.	San Antonio, New Orleans	48,361
14	Ss.	Ball Butte, Boston	57,121
15	Ss.	Aztec, Nassau f/o	44,487
17	Ss.	Limicana, Nassau f/o	49,991
28	Ss.	San Antonio, New Orleans	47,870
		Bunker deliveries	50,536
		Total	577,091

By Mexican Gulf Oil Co.

3	Ss.	Currier, Savannah	41,053
5	Brg	Conneaut, Galveston	16,545
6	Ss.	Ligonier, Galveston	30,417
6	Ss.	Topila, Philadelphia	48,866
20	Ss.	Agwimars, United States	66,573
28	Ss.	Topila, Philadelphia	48,384
		Bunker deliveries	12,667
		Total	264,499

By La Espuela Oil Co.

4	Ss.	F-Sulphur 1, Freeport	18,351
9	Ss.	F-Sulphur 1, Freeport	18,467
12	Ss.	F-Sulphur 6, Freeport	22,554
14	Ss.	F-Sulphur 1, Freeport	17,818
17	Ss.	F-Sulphur 6, Freeport	40,242
19	Ss.	F-Sulphur 1, Freeport	16,413
24	Ss.	F-Sulphur 1, Freeport	16,558
25	Ss.	F-Sulphur 6, Freeport	39,585
		Total	189,988

By East Coast Oil Co.

20	Ss.	Torres, Galveston	49,129
20	Ss.	Torres, Galveston	48,301
		Bunker deliveries	11,180
		Total	108,610

By Mexican Atlas Petroleum Corp.

2	Ss.	Nelson, New York	37,556
12	Ss.	Cassimir, New York	44,368
		Bunker deliveries	9,607
		Total	91,531

By Mexican Oil Products Corp.

2	Ss.	Wm. Isom, Baltimore	29,250
26	Ss.	Wm. Isom, Baltimore	28,957
		Bunker deliveries	3,168
		Total	61,375

By Empire Gas & Fuel Co.

15	Ss.	Glenpool, Baytown	53,048
17	Ss.	Caloris, Ceiba, C. A.	32,758
25	Ss.	Princeton, Baytown	51,389
		Total	137,195

By Panuco Boston Oil Co.

13	Ss.	Inverglass, Philadelphia	59,097

By The Texas Company

17	Ss.	Alabama, Port Neches	27,018
20	Ss.	Louisiana, Matanzas	25,758
		Bunker deliveries	1,101
		Total	53,878

By Pierce Oil Corp.

		Coastwise	23,489
		Bunker deliveries	4,503
		Total	27,992

From Tuxpam

By Mexican Eagle Oil Co., Ltd.

		Coastwise deliveries	46,801
		Bunker deliveries	9,015
		Total	55,816

March Summary

From Tampico	8,764,883
Tuxpam	55,816
Total March, 1926	8,820,699
Total March, 1925	11,422,975
Decrease March, 1926	2,602,276

Division of Movement

To United States	6,387,573
Cuba and West Indies	1,155,458
United Kingdom	279,020
South America	185,393
Mexican coastwise	301,667
Panama	66,870
Central America	63,884
Bunkers (to balance)	380,874
Total	8,820,699

Classes

Crudes	4,809,982
Topper crudes	2,953,116
Distillate	676,727
Bunkers (to balance)	380,874
Total	8,820,699

*Denotes topped crude; †denotes distillates.

Three Simple Precautions That Insure Longer Service

A FINE oil well line deserves good treatment. The life of the best can be needlessly shortened by abuse. Wickwire Spencer lines represent the best that long experience and careful manufacture can produce. Three simple precautions will insure your obtaining the full saving and satisfaction resulting from their superiority.

1. Before using a line run it a few times without actual work to let it "get set."

2. Apply loads gradually. A sharp stress which suddenly throws a greatly increased burden on the line hastens its deterioration.

3. Lubricate frequently. Rust is a greater enemy than usage.

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Elms Brothers Waynesburg, Pa.
Penn Pipe & Supply Co., Sheffield, Pa.
Leidecker Tool Co., Marietta, Ohio
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Engineers Report on Chickasha Field

Bureau of Mines Investigation Supplemental to the Kirwan-Swigart Examination of 1923 Just Made Public

By R. R. Brandenthaler and E. P. Camp-bell

The Chickasha Gas Field of Oklahoma, discovered in July, 1922, has proved to be a gas reserve of appreciable size. The Bureau of Mines made an engineering report in May, 1923. At that time only the shallower Nichlos zone had been developed, although one well had been drilled into the Ramsey zone. Subsequently the Ramsey zone has been developed, which has added materially to the gas reserves.

More than 110 wells are now producing. In December, 1925, the deliveries from the field were approximately 46,000,000 feet a day. Prior to November, 1925, the major portion of the gas produced was used for domestic and industrial consumption in Oklahoma City. In November, 1925, a line from Duncan to the field was completed and put in operation. Since then a large amount of gas has been transmitted through the line to supply consumers in Texas. The curve shown in Figure 1-B represents the increasing drain of gas from the field reserve.

This investigation and report was made under the general direction of H. H. Hill, chief petroleum engineer of the Bureau of Mines. Thanks are due the operating companies of the field for supplying all the assistance asked for in making the field study. W. A. Hazard, C. W. Parsons, George W. Stogner, Powell Briscoe, John B. Nichlos, and John W. Baxter, for helping in collecting records and furnishing valuable history not recorded. The records of the Corporation Commission of Oklahoma were freely used, particularly certain records listed in a report by B. P. Stockwell, engineer of the commission. The following Bureau of Mines employes assisted in the work: Floyd Swindell and C. R. Bopp ran levels and collected data; Morgan Walker and E. L. Rawlins, made open-flow and rock-pressure tests; Miss Ruth Brown, directed and assisted in all drafting work; Hugh M. Kent, compiled data. I. B. Williams prepared the part of the report that relates to siphons.

Geology and Subsurface Structure

The formations encountered in the wells drilled in the field, including the deeper test wells, are of the red beds in the upper Permian as found in southern Oklahoma. The characteristics of the interlying red shales and sands with streaks of limestone are identical to the same formations penetrated in the southern part of the State.

The subsurface structure of the Chickasha Gas Field as represented by well logs, consists of a major anticlinal fold with its axis running north and south. (See Figure 6, Contour map of the field.) Two domes are superimposed on the major structure. The north dome, the higher and larger of the two, is an elongated dome located in Township 5n, Range 8w, with its high point approximately in the north central part of Section 26. This dome constitutes the major portion of the producing area, and on it the discovery well was drilled in Section 26. The smaller south dome is in Township 4n, Range 8w. The apex is in the north central part of Section 11, but a nose extends south into the northern part of Section 14. The producing areas of the two domes on the structure are connected.

The contours on the extreme southern part of the structure are not closed as it is believed that the major anticlinal fold continues further south and probably includes a minor dome upon which Emerald Oil Co.'s No. 1 Goerts is located. This well, in the southeast corner of Section 26, was completed as a gas well.

The structure shown on the contour map accompanying this report (see Figure 6) represents the top of the Ramsey zone. Many cross-sections were constructed showing graphically the position of the formations along certain lines across the field. From these cross sections a contour map was constructed. This map, as will be noticed, conforms very closely to the structural contour map of the top of the Nichlos zone as shown by Kirwan and Swigart.

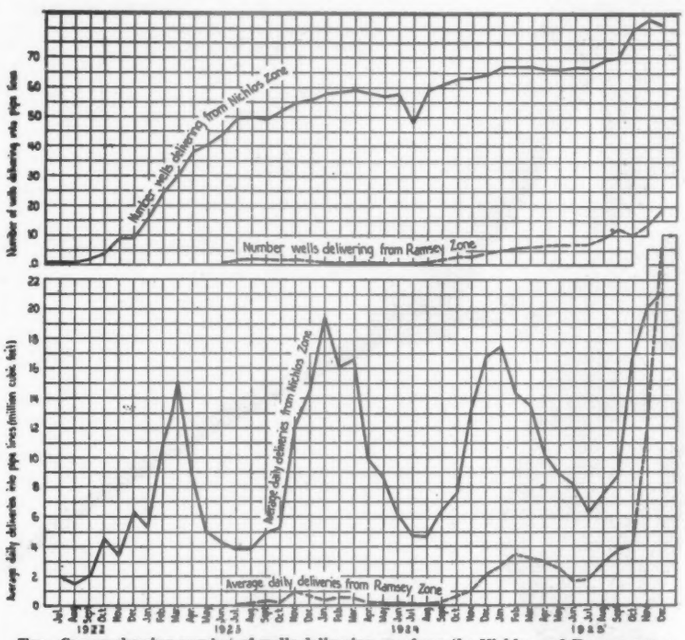
Development of the Field

The discovery of gas in July, 1922, by the Nichlos Drilling Co. in No. 1 Farwell, Section 26, Township 5n, Range 8w, attracted many interests and in a short time numerous wells had begun drilling to the Nichlos zone. By the end of the year, 10 wells were drilled and were delivering an average of over 6,000,000 feet of gas a day to the line. In another year, 55 wells had been completed as gas wells and were delivering from 4,000,000 to 19,000,000 feet of gas a day, according to the demand. During December, 1925, gas deliveries to the pipe line from more than 70 wells completed in this zone averaged 21,000,000 feet a day.

The first well completed in the Ramsey zone was brought in during March, 1923, by W. R. Ramsey. The top of this zone was found about 780 feet below the top of the Nichlos zone. This zone had a much higher initial rock pressure and a greater open-flow volume than the Nichlos zone. This discovery indicated the possible existence of a larger gas reserve than was contained in the Nichlos zone. The Ramsey zone was developed at a comparatively slow rate. At the end of the first calendar year following discovery there had been only two gas wells drilled to it, and only one was producing.

Prior to the first of 1925, the zone had not been a factor in supplying gas to the line. The average deliveries were less than 5,000,000 feet a day; with production coming from four wells in December, 1924. By the end of 1925, the Ramsey zone had been developed to the extent that more than 15 gas wells were completed and producing. The deliveries averaged 24,000,000 feet a day during the month of December, 1925.

On October 9, 1923, the Magnolia Petroleum Co. completed No. 1 Irwin, in Section 14, Township 5n, Range 8w, at a depth of 3,178 feet, making a discovery of gas in a new sand called the Magnolia sand, approximately 875 feet below the top of the Ramsey zone. The sand was penetrated to a depth of 8 feet. It had an initial rock pressure of 1,200 pounds per square inch and an open flow capacity of 18,000,000 feet a day. Shortly after, No. 1 Cotton Patch was drilled 300 feet to the west as an offset and proved to be a small producer. To date these two wells are the only ones producing from this sand and have been delivering a small amount of gas daily since completion.


Number of wells delivering into pipe lines
Number wells delivering from Nichlos Zone
Number wells delivering from Ramsey Zone
Average daily deliveries into pipe lines (million cubic feet)
Average daily deliveries from Nichlos Zone
Average daily deliveries from Ramsey Zone
1922
1923
1924
1925

Top—Curves showing number of wells delivering gas from the Nichlos and Ramsey zones by months. Bottom—Curves showing average daily pipe line deliveries of gas from Nichlos and Ramsey zones.

Well Spacing

Kirwan* and Swigart say: During the early life of the Chickasha Field some wells were spaced at distances of 150 to 250 feet from the property line. One well for each 10 acres has also been a more or less common practice. Due to the limited market for gas, however, operators during the past few months have adopted, where property ownerships would permit, a spacing of one well to 40 acres.

Since Kirwan and Swigart made their report, more than 80 gas wells have been drilled in the field. Apparently the sizes and shapes of various leases, and lease obligations, have influenced the spacing of wells. On the north dome, most of the wells are drilled in the centers of 10-acre tract legal subdivisions generally offsetting other similarly located wells on adjoining 10-acre tracts. In a few instances the offsetting wells are located in the centers of adjoining 40-acre tracts.

On the south dome, the spacing is usually one well in the center of a 40-acre legal subdivision.

Factors Affecting Ultimate Recovery

It is believed that the spacing of wells is of more vital importance in a gas field than in an oil field. Because of the greater ease with which gas migrates from one formation to another, a closer spacing than is necessary increases the possibilities for the gas escaping into unproductive formations and thereby decreasing the ultimate recovery. Furthermore, each additional well drilled into a gas-bearing formation increases the water hazard, which is generally present in most oil and gas fields. Many times a field is so divided into leases that operators are required to drill more than the number of wells which would be capable of draining the gas formations. In such fields as the Chickasha Gas Field where the land is divided into many leases, a pooling of interests would result in greater profit to all concerned, and would at the same time tend to increase ultimate recovery. If adverse lease requirements could be eliminated, due consideration could be given to the proper spacing and control of wells.

Assuming that the lease requirements are favorable to the proper spacing of wells, several other factors should be considered. The greatest possible recovery of gas is of primary consideration. In a shallow gas field the tendency would be to drill more wells than is necessary thereby increasing the water hazard as well as increasing the possibilities for gas escaping into barren formations. Where productive formations lie at considerable depths, the tendency would be to drill fewer wells than were necessary to drain the field. In either case, the maximum amount of gas recovered would be less than if wells had been properly spaced.

Coarse textured sands offer less resistance to the flow of gas, consequently fewer wells are required to drain them. The reverse is true of fine textured or tight formations. Hence, the type of gas producing formation should be taken into account in the spacing of wells. In general, good practice in spacing gas wells in the same productive horizon, is considered to be one well to every 40 acres.

Penetration

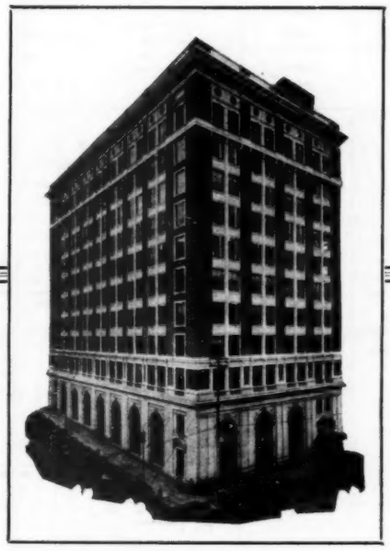
Other factors being equal, the ultimate production would be greater if one sand were drawn on at one time. As the sand became exhausted, the next lower one could be drawn on. By following this procedure, the possibilities for migration of gas and the effect of water would be greatly lessened. Where wells are producing from more than one sand, the point of entry of any water into the wells is more difficult to find, and even when it is definitely located greater and costlier repair work is usually necessary and the possibility for an effective water shutoff is considerably lessened.

It is believed that the general practice followed in the Chickasha Gas Field, whereby several sands produce at the same time, greatly lessens the ultimate recovery and will result in the premature abandonment of many wells.

It has been demonstrated that certain sands of the producing zones in the Chickasha Field do not contain gas and therefore afford opportunity for gas from other sands to migrate into them. A plan adopted by one operator is offered as a method which others could use to good advantage. Numerous cores are taken, and whenever a sand is encountered which contains gas the well is bailed down and an open flow test is made. Drilling is continued until another gas sand is penetrated; then another test is made. An increase of gas over the first volume would approximately represent the amount coming from the deeper sand. Tests are also made of sands which apparently do not contain gas. While this procedure would involve some time and expense it is believed that the information gained would more than compensate for the delay and cost.

It is further suggested that rock pres-

*Kirwan, M. J., Swigart, T. E., Engineering Report of the Chickasha Gas Field, U. S. Bureau of Mines, May, 1923.



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sures be taken whenever possible, as the tests are made. It has been shown that rock pressures vary somewhat in the different sands within the same zone. A knowledge of the rock pressures in these various sands would be of considerable value in determining the amount of penetration and also the cementing points.

Water Conditions

Reference has been made in the discussion of different zones, to the location and effect of water that was present in a sand as edgewater, bottom, or intermediate water, or had gained entry to the sand because of drilling into water below the zone or of setting casing too high above the zone. If all casing had been set systematically on the top of the Nichlos zone, the ultimate recovery from the field would very likely be greater than under the system that has been followed of setting casing without any regard to the top of the zone, for many of the wells were cased too high.

Water is present in the upper part of the Nichlos zone in different parts of the field, and it is believed that this is largely due to the unsystematic setting of casing in a number of wells.

In drilling to the Ramsey zone, the general field practice is to set casing above the Ramsey and none above the Nichlos zone. When this procedure is followed it is recommended that enough cement should be used to reach above the top of the Nichlos zone.

It is advisable that casing and water shutoff tests should be made as described in Kirwan and Swigart's report.

As the rock pressure in the Ramsey zone declines, it is very likely that the same conditions will arise which are beginning to affect gas production from the Nichlos zone. The area in the southern part of the field has already been affected by water.

Well Drilling

Most of the wells drilled in the field have been drilled and completed with rotary tools, although a few have been drilled entirely with cable tools. One company uses cable tools where they are considered best for prospecting ahead, particularly in the gas-producing zones. Wells are completed in 25 to 40 days.

During the early life of the field, a few wells blew wild, particularly one, which after creating a difficult situation, was put under control through the advisory work of C. O. Rison, at that time expert driller of the Bureau of Mines.

However, considering the number of wells drilled, the rock pressures encountered, and the extent of the field, the field has been handled very well with respect to bringing the wells in under control. One well blew wild for 17 days at the rate of 24,000,000 feet a day.

The use of heavy mud fluid during drilling to eliminate blow-outs, and the difficulty of distinguishing between formations, has resulted in the poor logging of many wells. As a result, there is a lack of knowledge in regard to the presence of good markers, important water sands and the position of the gas producing formations.

Measurements

When drilling is in progress it is a wise plan to measure the depth of the hole at strategic points, such as the expected points for setting and cementing casings, the location of important markers, the depths of producing formations, and the total depth of hole. If in rotary drilling the drill pipe is not measured with steel tape, a steel measuring line should be employed for accurate determination of well depths.

When cable tools are used accurate measurements can be made with the sand line or drilling cable, provided the distance over the derrick is first obtained with a steel tape. Even in cable tool drilling it is wise to check depths with a steel line.

Some operators are prone to scout the idea that accurate measurements are valuable, but, when no particular attention is paid to this important procedure, loss in production, water difficulties and premature abandonment of wells often result. Casing may be set too high, which would defeat the main purpose of setting

(Continued on Page 132)

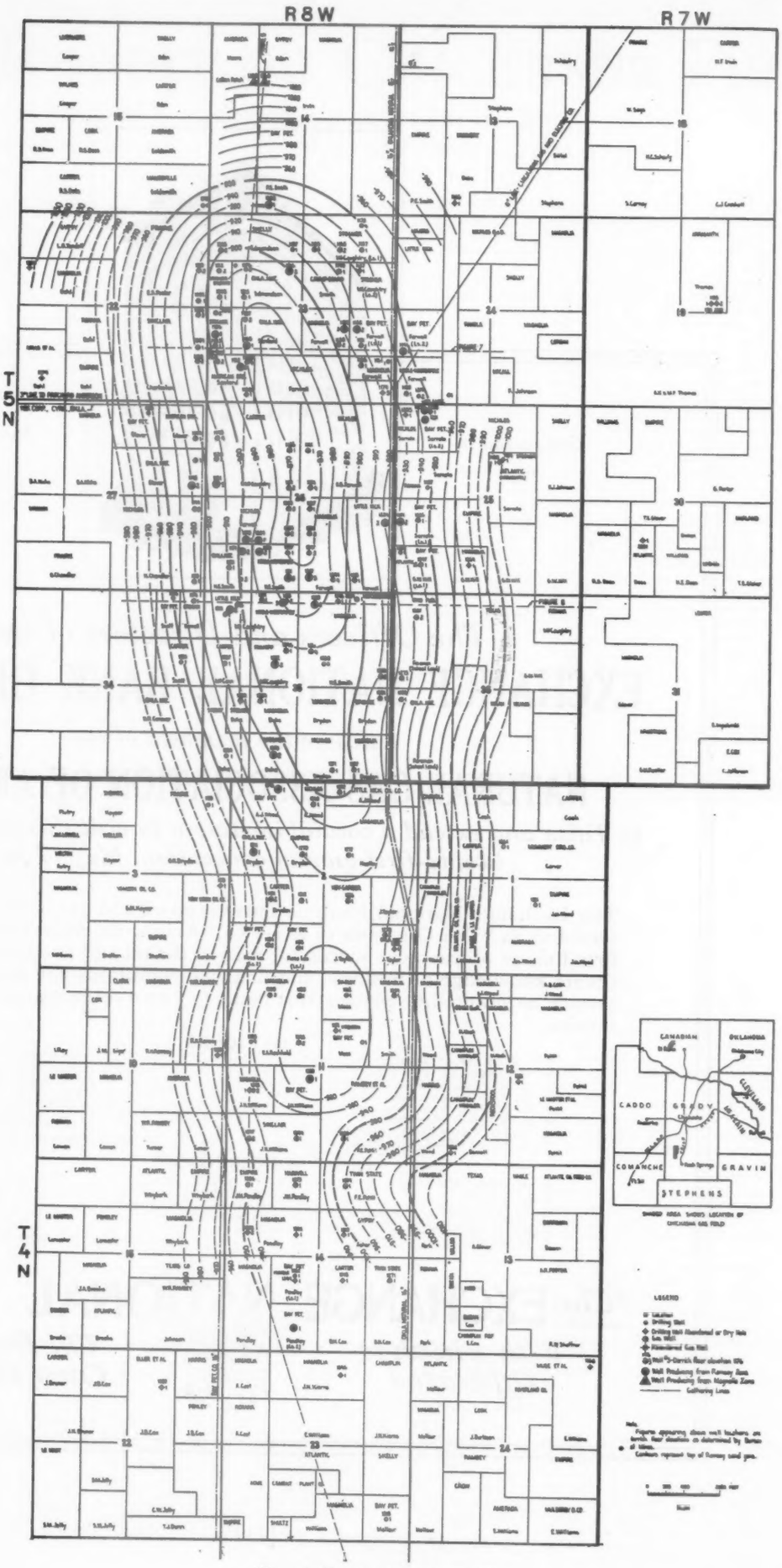


Figure 6—Map of Chickasha gas field.

Pennsylvania Area's Place in Refining

Great Bulk of Crude Run to Stills in that Section Is Produced Within Same Territory. Big Lub Production

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

This area, small in its present output of crude oil and of refined products, occupies a large place in the American Petroleum industry because, within its borders, is the birthplace of oil production—of oil refining—of the pipe line—of the tank car—of the natural gas industry—and of the natural gasoline industry.

And, aside from an almost negligible amount of crude oil produced in Californin, the Pennsylvania area, for 25 years, furnished the entire output of crude oil and refined products in the United States. In fact, up to the bringing in of the Mid-Continent and the Gulf Coast in 1901, the Pennsylvania area never produced less than 80 per cent of the yearly output of crude oil of the United States.

In 1925, it occupied the following position, in comparison with the total for the entire country.

	Pct.
Crude oil produced	2.7
Crude run to stills	3.4
Gasoline produced	4.0
Kerosene produced	5.7
Fuel oil produced	1.5
Lubricating oil produced	14.5
Natural gasoline produced	8.5

Big Volume of Lub Oils

In other words, it ran one-thirtieth of all the crude run to stills last year—and made one-seventieth of the fuel oil, one-seventeenth of the kerosene and one-seventh of the lubricating oil.

Some idea of the great difference in "lubricating value" of Pennsylvania and California crudes can be gotten from the following comparison, based on 1925.

Area—	Crude run to Stills (Bbls.)	Lub. Oil Made (Gal.)
California	184,181,000	103,147,000
Pennsylvania	25,118,000	189,467,000

And while the average recovery, last year, of kerosene for the entire country was 8 per cent, the average for this area was almost 16 per cent.

In the percentage recovery of both lubricating oil and kerosene this area ranks far above any other refining area in the United States, although in gallonage output of lubricating oil it ranks third—and in kerosene, seventh. In the production of gasoline it ranked ninth and in fuel oil, tenth—the bottom of the list.

The outstanding thing in the Pennsylvania area is not so much its kerosene for which it was once so famous as it is for its lubricating oil in the output of which it is exceeded only by the East Coast and the Texas Gulf Coast.

Part in Railroad Expansion

As the great "railroad building era" started with the close of the Civil War it is interesting to note that during this period of expansion practically all of the lubricating oil used by the railroads came from Pennsylvania refineries—and these refineries were obviously a vital factor in making this expansion possible.

But while the East Coast, Texas Gulf Coast and the Pennsylvania area are the largest producers of lubricating oil, the Pennsylvania area differs from both in that its crude yields a much higher recovery of gasoline and about 23 per cent fuel oil compared with about 45 per cent in the other two areas.

That the great bulk of the crude run to stills in the Pennsylvania area is produced within the area is obvious from the following tabulation:

Year—	Crude Produced	Crude run to Stills
1918	21,432,000	18,805,000
1919	22,537,000	20,483,000
1920	21,878,000	21,426,000
1921	21,426,000	19,289,000
1922	20,197,000	20,661,000
1923	20,148,000	21,352,000
1924	19,639,000	21,958,000
1925	20,483,000	25,118,000

Runs to Stills

In 1918, this area was producing less than 3,000,000 bbls. more crude than it was running to stills—and in 1925, it was running to stills almost 5,000,000 bbls. more than it was producing, thereby standing in striking contrast with the Indiana-Illinois area which is now running to stills about four times as much crude as it is producing.

In the Pennsylvania area, the "flow of oil" in the pipe lines is practically all eastward, which means that none of the crude run to its stills comes from the Atlantic Seaboard—and that it does come from the Mid-Continent. This is obvious because, in 1925, this area ran about 5,000,000 bbls. more crude than it produced, while the Indiana-Illinois area run about 50,000,000 bbls. more than it produced.

In the accompanying large graph it is amazing to note that in eight years the monthly runs of crude to stills have ranged between a high of 2,243,000 bbls. in August, 1925, and a low of 1,381,000 bbls. in July, 1921—a "range" of only 862,000 bbls.

In this same 8-year period, the range between the lowest monthly run and the highest was 5,000,000 bbls. in the Oklahoma-Kansas area—over 6,000,000 bbls. in the Texas Gulf Coast—and nearly 13,000,000 bbls. in California.

Different From Other Areas

Studying the large graphs in the eight articles of this series already published, it will be noticed that only a very few times do the 6 lines (4 output lines and 2 stock lines) "mass," or come close together. But in the accompanying graph of the Pennsylvania area, these 6 lines "mass" at least five times—in the fall of 1918 and of 1919, the summer of 1920, the fall of 1922 and of 1924. In December, 1919, the output of gasoline, kerosene, fuel oil and lubricating oil and the stocks of gasoline and of fuel oil fell within a range of less than 9,000,000 gallons.

In the Pennsylvania area, on January 1, 1926, there were 72 refineries with a rated capacity of about 104,000 bbls. a day, and of which 65 with 101,000 bbls. capacity were operating. During 1925, the runs to stills averaged about 69,000 bbls. a day which means that last year the refineries in this area operated at about two-thirds of their rated capacity. The production of crude oil in this area last year averaged 56,000 bbls. a day. Set up in tabular form, the foregoing would be as follows:

	Bbls. per day
Crude production	56,000
Crude run to stills	69,000
Rated refining capacity	103,750

Present Position

With its own production slowly declining, and with tankers supplying the Atlantic Seaboard and pipe lines, the Indiana-Illinois area, it is obvious that the economic factors connected with refining in this area are slowly becoming more clearly defined and their limits more closely drawn.

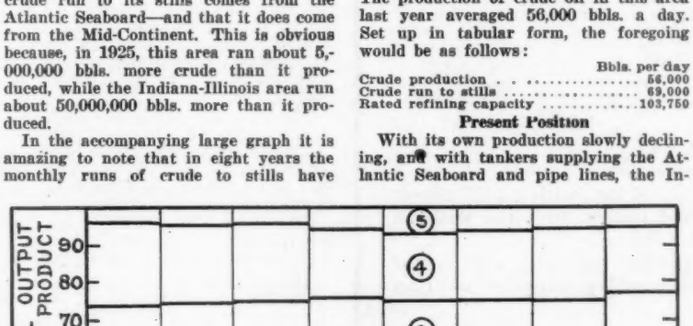
Of the seven refineries (2,580 bbls. combined capacity) shut down January 1, 1926, none had cracking units. Of the 65 operating refineries, 22 with 56,560 bbls. capacity were equipped with cracking units, while 43, with 44,610 bbls. capacity were not so equipped. Of those equipped with cracking units, it is interesting to note the number that are installed at refineries of 2,000 bbls. capacity, or less.

The "100 per cent graph" herewith, shows that in eight years the recovery of gasoline has increased from a little over 30 per cent to slightly over 40 per cent. The following tabulation shows the source of this area's output of gasoline in 1925.

Source—	Gallons	Pct.
Straight run	25,334,000	68
Cracked	10,894,000	29
Natural gasoline	1,260,000	3
	37,488,000	100

Although this area was the birthplace of the American oil industry, of refining, of the pipe line, of the tank car, of the natural gas and natural gasoline industries, it has been denied having either the deepest or the largest oil wells, or the largest refineries, or largest natural gasoline plants or the largest pipe line systems. Today, however, the Pennsylvania area produces more natural gas than any other refining area in the United States, and as much as the three refining areas that make up the Mid-Continent.

Lying between the Atlantic Seaboard with its great local and export markets and the Indiana-Illinois area whose rich market is the upper half of the Mississippi Valley, the refiners in the Pennsylvania area have wisely been content to let the "expansion" of refining go to the Seaboard and the Mississippi Valley—and have confined their efforts almost entirely to running their own production.



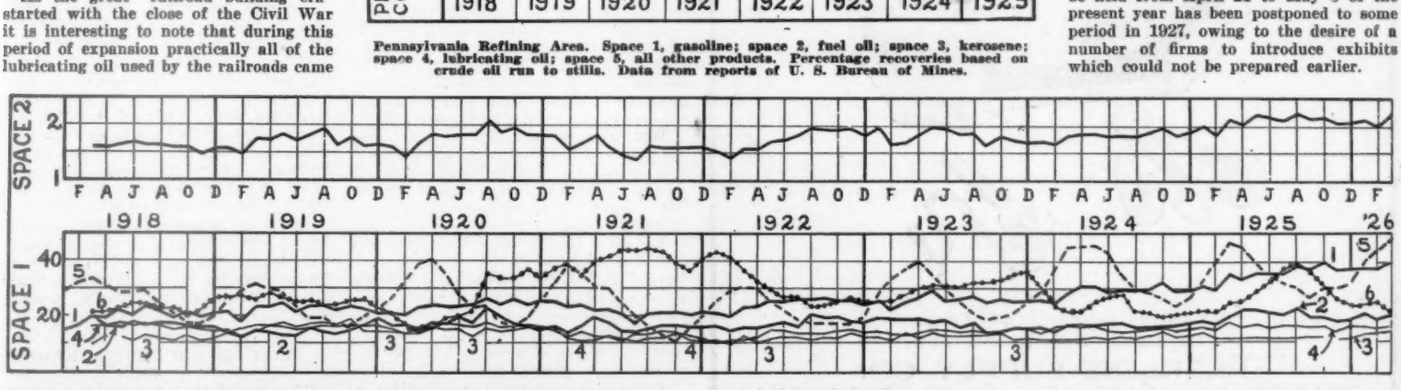
Pennsylvania Refining Area. Space 1, gasoline; space 2, fuel oil; space 3, kerosene; space 4, lubricating oil; space 5, all other products. Percentage recoveries based on crude oil run to stills. Data from reports of U. S. Bureau of Mines.

RUSSIAN OIL FOR TURKEY

WASHINGTON, D. C., May 15.—The Russian embargo has been greatly modified according to the advices to the Department of Commerce. The Russian Naft Syndicate has been given the first contract for the supply of oil and benzine to the Turkish state monopoly.

ENGLISH OIL SHOW OFF

The International Oil Exposition and Petroleum Congress originally planned to be held from April 21 to May 8 of the present year has been postponed to some period in 1927, owing to the desire of a number of firms to introduce exhibits which could not be prepared earlier.

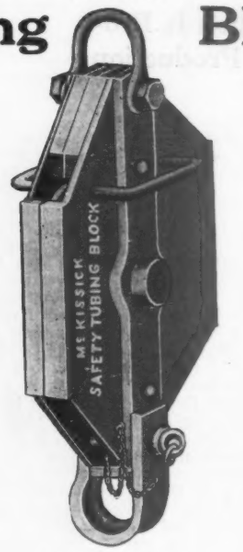


Pennsylvania Refining Area. Space 1, output of four major and storage of two major products in millions of gallons per month. Space 2, crude run to stills in millions of barrels per month. Line 1, gasoline made; line 2, fuel oil made; line 3, kerosene made; line 4, lubricating oil made; line 5, gasoline in storage at refineries; line 6, fuel oil in storage at refineries. Data from reports of U. S. Bureau of Mines.

McKissick Safety

(*Eccentric*)

Tubing Block



Patent Applied For

Block closed

The following are a few of the users of the McKissick Tubing Block:

Carter Oil Company
Empire Companies
Gypsy Oil Company
Kingwood Oil Company
Mid-Continent Petroleum Corp.
New England Oil & Pipe Line Co.
Pure Oil Company
Phillips Petroleum Co.
Prairie Oil & Gas Co.
Roxana Petroleum Corp.
Shaffer Oil & Refining Co.
Skelly Oil Co.
Sinclair Oil & Gas Co.
Twin-State Oil & Gas Co.

26″ Block is 43″ over all, weighs 290 lbs., with a 2¾″ center pin, Phosphorous Bronze bushed pulley, supplied with an Alemite Oiling System.

32″ Block is 54″ over all, weighs 620 lbs., with a 4″ center pin, Phosphorous Bronze bushed pulley, supplied with an Alemite Oiling System.

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CENTRAL WEST

(Continued from Page 64)

W. King of Columbus, Ohio, who owns three old wells in Section 30, Blue Creek Township, same county, on the C. Jones farm, has staked a location for No. 4. Harmon and Watts have made a location for a well on the J. Corey farm, Section 6, Jefferson Township.

In the territory mentioned it is probable less than 10 per cent of the locations have been drilled and with wells like those being found of recent date the field should get a nice play.

Illinois

Only five actual completions were reported during the week from the Illinois Field, the only well of any value being found was the Mahutska Oil Co.'s third well, 200 feet from the south line and 600 feet from the east line of the Harriett Slater farm, in the southwest quarter of Section 30, Martinsville Township, Clark County, with a flush of 65 bbls. from the Niagara lime at a depth of 1,592 feet, which is about 100 feet below the Carper or Stray sand. In Parker Township, same county, the Ohio Oil Co.'s No. 25, in the northeast corner of the J. S. Phillips, Section 18, pumped 3 bbls. at 500 feet.

The Selby-Cisler Producing Co.'s No. 27 in the northeast corner of the Claudie A. Reavill farm, in the southeast quarter of Section 36, Honey Creek Township, Crawford County, pumped 15 bbls. at a depth of 985 feet.

In Dennison Township, Lawrence County, the Snowden-McSweeney Co. abandoned Nos. 5 and 8 wells on the C. M. Lewis farm, in the northeast quarter of Section 3.

In Wabash Township, Wabash County, two completions were reported, both being dusters. They are the Black Gold Oil Co.'s No. 3 well, 400 feet from the north line and 750 feet from the west line on the Price heirs farm, mapped as the J. T. Smith farm, in the northeast quarter of Section 22, and the Mahutska Oil Co.'s No. 7, located 800 feet from the north and east lines of the J. F. Stillwell farm, Section 12.

The Allendale Oil Co. has made a location on the John Barney 32 acres, in the northeast quarter of the northwest quarter of Section 1, Wabash Township, and just south of the Price farm well. A location is reported to have been made on the west line of the C. C. Clark farm, Section 36, same township, and north of Allendale near the Lawrence County line.

Healey & Lee's second well on the Ezra Bass farm, Section 19, Wabash Township, in the Friendsville area, has been drilled in, but the oil comes so strong that it is being pumped naturally so they can lower the oil to give it a shot. This is on the farm where the discovery well was found. No. 2 went 42 feet in the sand and shows equally as good, if not better, than the discovery well with a flush of 200 bbls. No. 2 on the John Price farm, same section, and owned by Joe S. Young, Jr., and others, is also showing for a nice producer, with No. 3 getting ready to spud in.

Edwards County is to have another test. This time the Grayville Oil Syndicate will try its luck on the James M. Helm farm, to the northwest of Grayville. The rig is up and completed and the contract let for the drilling to Fred Alton, who expects to have the tools in and ready to start spudding within a few days. This location is on a structure, or close to it, that lies to the west of Grayville and should a commercial well be found things will hum in the vicinity of the town as much acreage has been taken up by lease.

The Dane Oil Co. has drilled deeper its No. 2 on the Holson-Dorney lease, Section 18, Wabash Township, Wabash County, and the report is that the well shows a nice improvement. This may bring about the drilling deeper of numerous wells in the immediate vicinity.

Central Ohio

The Logan Gas Co. has completed a good gas well at its No. 3 on the Seward R. Williams farm, Section 13, Adams Township, Guernsey County. No. 4 well, 660 feet from the north and east lines of the same farm, has been located and will start at once.

Warren Palmer and others made a good strike in their test in the northwest corner of the George Schuler 147 acres, Section 14, Hardy Township, Holmes County, as the well is credited with a flush of 125 bbls. In Kilbuck Township, same county, the East Ohio Gas Co. is credited with a big gasser in a test 330 feet from the south line and 660 feet from the west line of the Charles Hammondtree 116 acres, Lot 22. Same company has started the drill at a test in the southeast corner of the Sanford Carpenter 67 acres, Lot 4, same township. In Hardy Township, same county, the same company made a location for No. 3 well 1,000 feet from the south line and 330 feet from the east line of the Dave R. Ankrum 100 acres, Lot 24, and in Prairie Township, same county, its No. 6 on the northeast corner of the Wayne F. Kendall 168 acres, is credited with a production of 8 bbls.

In Monroe Township, Holmes County, the Empire Gas & Fuel Co.'s second well in the southwest corner of the U. S. Davenport 36 acres, Lot 4, is an average gas producer.

In Jefferson Township, Knox County, I. E. O'Hail is drilling a second test on the Bert Nyhart 166 acres, Section 4. East Ohio Gas Co. made a location for a test in the northwest corner of the Pater Kaufman 120 acres, and the Upham Gas Co. staked a location for a test 1,525 feet from the south line and 335 feet from the east line of the Catherine Logsdon 31 acres, Section 20.

In Orange Township, Ashland County, the Logan Gas Co. abandoned its location for No. 2 on the J. F. Brockaway 105 acres, Section 4, but drilled in No. 3, which is 300 feet from the south line and 700 feet from the east line of the same farm, getting a good gas well. Same company is drilling No. 1 on the W. H. Brandt 252 acres, Section 2.

In Ashland County work is picking up to some extent. In Sullivan Township, the Klise-Eckstein-McCann Co. is drilling a second well on the J. A. Spencer 34 acres, Lot 80. In Green Township, the Logan Gas Co. set a stake for No. 5 well 640 feet from the south and west lines of the P. C. Cowen 350 acres, Section 21, and in Westfield Township, drove a stake for a test 800 feet from the south line and 1,000 feet from the east line of the T. D. and Laura England 74 acres, Section 25. Geiger & Barnhart made a location for a test 500 feet from the south line and 350 feet from the east line of the Martha King 81 acres, Section 36, Mifflin Township.

The Ohio Fuel Gas Co. has started the drill at its test on the B. L. McFadden 41 acres, Lot 50, Montville Township, Medina County.

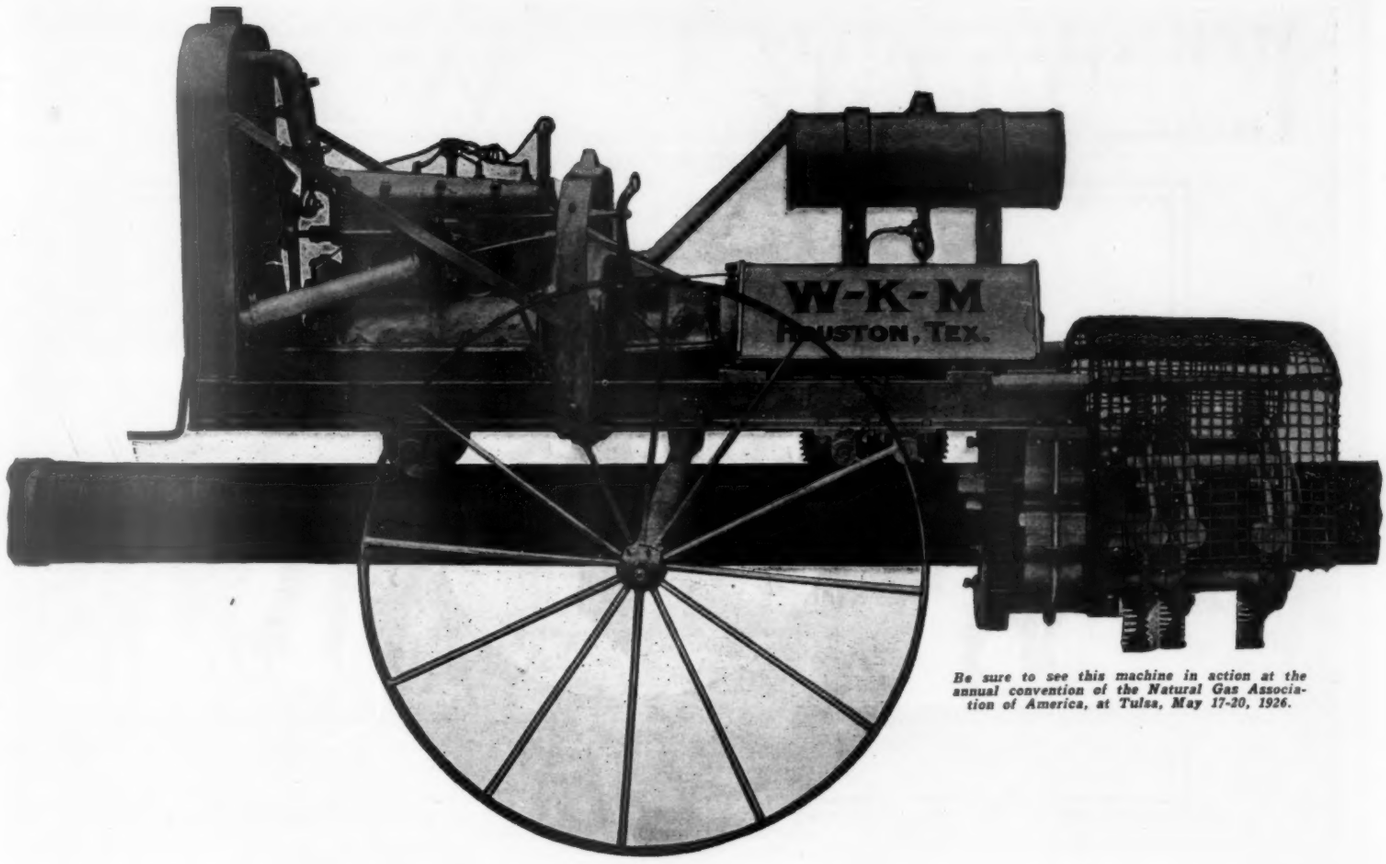
In Columbia Township, Lorain County, Dillon & McFrederick Brothers' test, 550 feet from the south line and 325 feet from the west line of the C. W. and I. Chope 86 acres, Lot 6, produced close to 1,000,000 feet after shot at a depth of 2,888 feet. The Logan Gas Co. made a location for a test 1,000 feet from the north line and 50 feet east of the road, on the Joseph A. Rising 89 acres, Lot 90, in Grafton Township, same county.

Congress Township, Wayne County, is coming to the fore in operations. A short time ago no work was being done in the township, while now there are five wells under way or getting ready to start. The Arco Oil Co. has its No. 3 on the C. Spreng 135 acres, Section 25, drilling, as is the Ohio Fuel Gas Co.'s No. 1 Stanley Smith 134 acres, Section 32.

In Dover Township, Cuyahoga County, Mulford Portmann is drilling a test in the northeast corner of the W. H. Reeves 2 acres, Section 28, and Arthur & Simpson are drilling a test on the W. Glasgow farm, Section 28.

SINCLAIR ORDERS TANKERS

The Sinclair Refining Co. has ordered 50 tankers from the General Tank Car Co.



Be sure to see this machine in action at the annual convention of the Natural Gas Association of America, at Tulsa, May 17-20, 1926.

75 Men Replaced by this machine

Either made-up pipe lines or single joints cleaned perfectly, ready for insulation. Will clean an average of one joint every three minutes, at an average cost of 30c per joint. Special process used which guarantees absolutely uniform and perfect work.

TWO W-K-M Pipe Cleaning Machines will be on exhibition at the annual convention of the Natural Gas Association of America, to be held at Tulsa, May 17-20. One machine, 12-inch size, will be in the Exposition building. Another, 8-inch size, will be located on the premises of the Oklahoma Natural Gas Company, through the courtesy of Mr. A. W. Leonard, President. This latter machine will be used for demonstration work, and will be operated at certain hours throughout the day to be announced at the Convention.

INCREDIBLE as it may seem, the machine illustrated above can do the work of from fifty to seventy-five men in cleaning pipe—either on loaded pipe lines, or on single joints. Moreover, it does a class of work impossible to duplicate by hand, or by any other method yet devised. Pipe is cleaned equally as well on the bottom as on the top and sides, and all rust, scale and corrosion is removed down to the bright steel. A perfect bond between insulating material and the pipe is always assured when this machine is used to do the cleaning work.

Even more startling than the number of men this machine replaces in pipe cleaning work, is the extent it reduces the cost of this operation. In ordinary circumstances, and under average conditions, it costs from 70% to 80% less to clean pipe with the W-K-M Pipe Cleaning Machine than it costs to do the work by hand. Records of many tests show that it costs an average of 30c per joint to make a perfect job of pipe cleaning with this machine. The cost, however, will vary according to the condition of the pipe, and will be slightly higher when more time per joint is required to make a perfect job.

THE MACHINE is designed to travel along loaded pipe lines which have been lifted out of the ditch and placed on skids. Speed of travel may be regulated from nothing to six feet per minute, depending upon condition of the line. It is not necessary to break the line, or to lift the machine over the couplings. The specially designed rotating cutter head automatically expands to clear collars or couplings, and cleans these as perfectly as the pipe itself.

When desired, the machine can be mounted for stationary yard work, and by building a platform in front and rear of the machine, single joints may be cleaned as perfectly as made-up pipe lines, and just as economically.

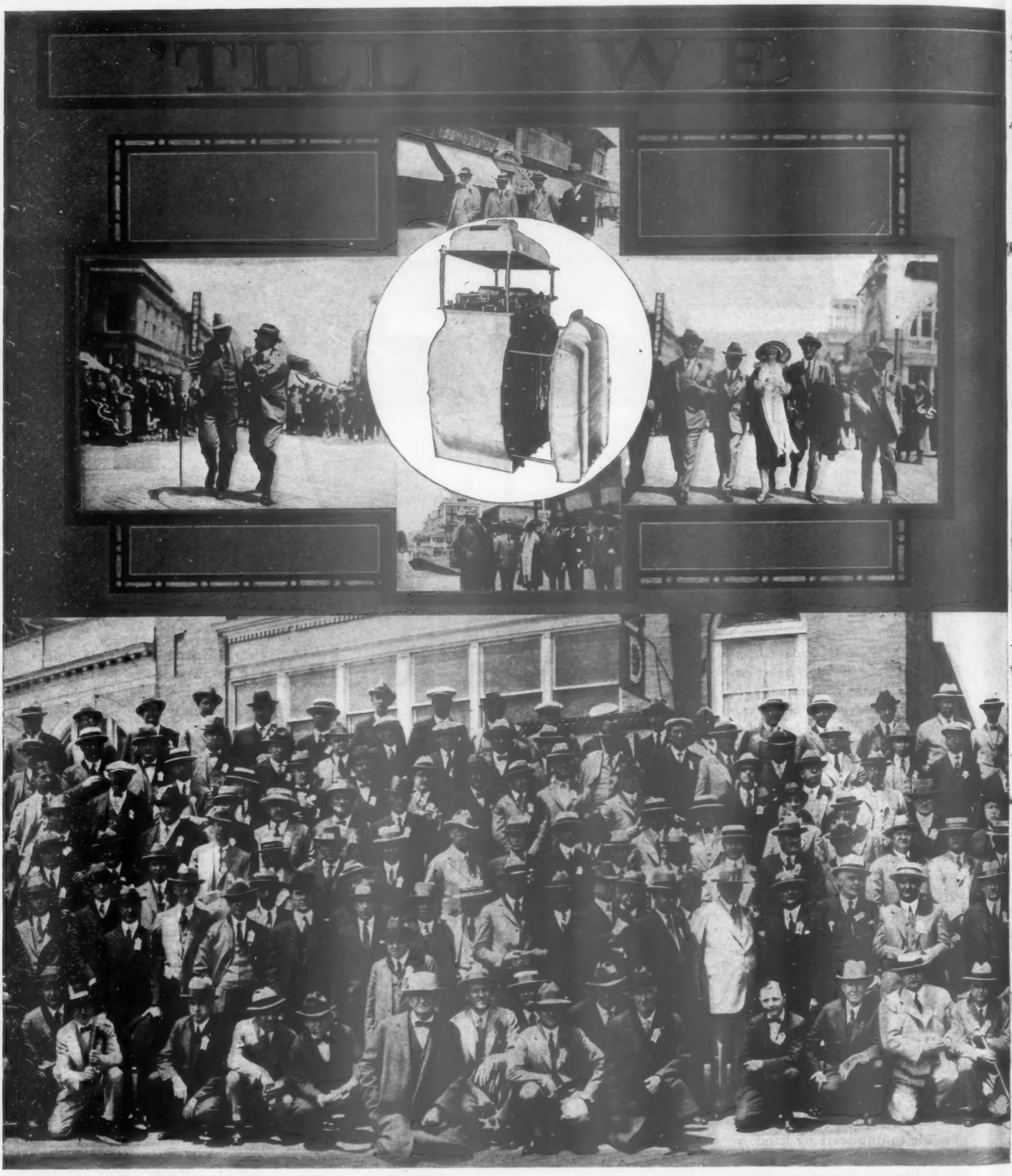
AT THE Tulsa Convention every executive who lists pipe cleaning work among his responsibilities should obtain the full facts regarding this machine, and should take time to witness a demonstration. The W-K-M Company will have men on hand who are thoroughly conversant with every phase of pipe cleaning work, and will be glad to discuss individual problems with those interested. Association members who cannot attend the Convention are urged to write for full particulars of this machine.

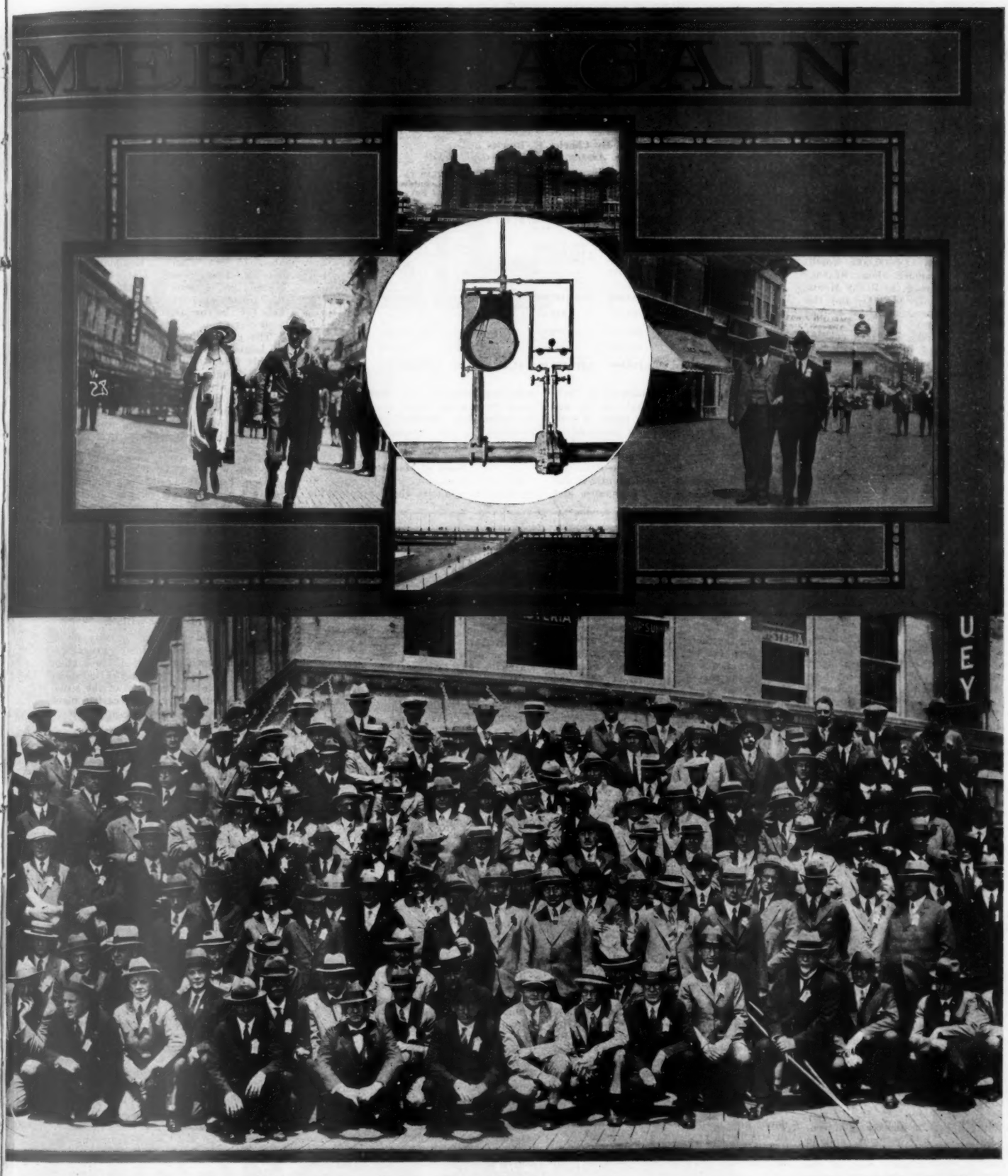
The W-K-M Company will gladly provide all details and blueprints, supplemented by reports of some of the very unusual records which have been established by the machine in the service of various major companies. Request for this information involves no obligation whatsoever.

W-K-M Company, Inc.

West Bldg. Houston, Texas

W-K-M Representatives will be quartered at the Mayo Hotel during the Convention.


WESTGOTT & GREIS
MEASUREMENT



WESTCOTT & GREIS

Natural Gas Industry Shifts Southwest

States West of Mississippi River Taking Lead in Production and Quantity of Fuel Distributed to Consumers

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

From an oil and gas producing standpoint the Mid-Continent is only about 25 years old. The area east of the Mississippi had produced over $400,000,000 worth of natural gas before any Mid-Continent state, aside from Kansas, had produced practically any— and Kansas had produced only $8,000,000 worth. California had produced about $1,000,000 worth—the value of the Rocky Mountain output was only $87,000—and the small, scattering production of several states about $158,000.

To the end of 1905, the area east of the Mississippi had produced 97.8 per cent of the value of all of the natural gas produced in the United States.

In the next 15 years, however (1906 to 1920), the situation changed. Glenn Pool development began in 1906—and by 1920 the Mid-Continent had grown until it was producing over 56 per cent of the entire output of the crude oil in the United States.

Value of Production

The aggregate value of the natural gas produced east of the Mississippi during these 15 years was $1,161,000,000. The value was 2½ times as much for the 15-year period as for the preceding 23 years.

The value of the Mid-Continent output during the period from 1906 to 1920 was $286,000,000—California about $54,000,000—the Rocky Mountain area about $1,500,000—with about $500,000 scattered among several small producing states.

The output of the entire United States for this 15-year period was $1,504,000,000—of which the eastern area produced 77 per cent and the Mid-Continent 19 per cent. These two areas, therefore, produced 96 per cent of the value of the natural gas in the United States.

But that is only part of the story. The Mid-Continent produced 26 per cent of the entire volume of natural gas, and 19 per cent of the entire value for it—while the Eastern area produced about 70 per cent of the volume, and 77 per cent of the value.

In the last 4 years (1921 to 1924), this shift in the "volume-value ratio" has become much more pronounced. In these 4 years, the Eastern area produced 1,442,000,000,000 feet of gas valued at $545,000,000, while the Mid-Continent produced 1,525,000,000,000 feet, valued at $237,000,000.

Rise of Mid-Continent

This means that during these 4 years the Mid-Continent actually produced more natural gas than the entire area east of the Mississippi—and that its value was less than half as much as the Eastern output.

Expressed in percentages, the Eastern area produced 40 per cent of the volume with 61 per cent of the value—and the Mid-Contient over 42 per cent of the volume with less than 27 per cent of the value.

All of which goes to prove that, regardless of the intrinsic value of natural gas, the price received for it depends, finally, upon the nature and size of the market.

Beginning almost a quarter of a century before the Mid-Continent, and in the heart of a rich domestic and industrial market, the industry east of the Mississippi was well developed before there was a real natural gas industry in the Southwest.

Big Volume in Southwest

With the development of the Mid-Continent the pendulum of "volume" started to swing towards the Southwest—and, today, this area is producing more natural gas than any other area in the United States.

But the pendulum of "value" has not swung as fast as the pendulum of "volume"—with the result that, in the aggregate, the value, at the point of production, of the natural gas produced in the Mid-Continent was less than half that received by the producers east of the Mississippi. The fundamentals underlying this situation are essentially the relative importance of the domestic and industrial markets for natural gas in these two areas, plus the outstanding limitation that "surplus" gas in the Mid-Continent is not transportable to markets east of the Mississippi, however welcome it would be.

Natural Gas Output and Value, at Point of Consumption, From 1882 to 1924. No Figures for Value Available Prior to 1882. No Figures for Volume Available Prior to 1906. Compiled From Reports of United States Geological Survey.

	1882 to 1905	1906 to 1920		1921 to 1924	
Area—	Value	M. Cu. Ft.	Value	M. Cu. Ft.	Value
East of Miss. River	$417,174,000	6,197,211,000	$1,161,430,000	1,442,110,000	$545,440,000
Per cent	97.8	69.8	77.2	40.3	61.3
Southwest:					
Kansas	7,520,000	620,874,000	83,169,000	92,499,000	37,841,000
Oklahoma	181,000	1,183,886,000	130,299,000	682,223,000	119,164,000
Texas	108,000	176,508,000	36,721,000	274,231,000	44,584,000
Arkansas	31,000	42,099,000	7,326,000	74,791,000	10,945,000
Louisiana	.....	311,040,000	29,231,000	401,247,000	24,957,000
Total	$8,140,000	2,334,407,000	$286,745,000	1,524,991,000	$237,491,000
Per cent	1.9	26.3	19.1	42.7	26.7
Rocky Mountain	87,000	24,933,000	1,515,000	124,013,000	13,820,000
Per cent	.0	.3	.1	3.5	1.5
California	1,186,000	314,908,000	54,439,000	481,648,000	93,136,000
Per cent	.3	3.6	3.6	13.5	10.5
Scattering	158,000	1,299,000	496,000	333,000	128,000
Total	$426,745,000	8,872,758,000	$1,504,625,000	3,573,095,000	$890,009,000

The great Monroe Field is the heart of Louisiana's natural gas output—and if this field could be transported to the thickly inhabited and industrially highly developed areas in the northeastern part of the United States the "value" of the output would be very different from that indicated by the following comparison based on the 4-year period, 1921-1924.

Area—	Cu. Ft.	Value
East of Miss.	1,442,110,000,000	$545,440,000
Louisiana	401,247,000,000	24,957,000

Thus Louisiana produced, during the above 4 years, 28 per cent as much natural gas as the entire area east of the Mississippi—and with a value less than 5 per cent as much.

Of course the answer is that, until recently, here have been no pipe lines to carry the gigantic output of this marvelous field to firesides and factories comparable to more than a degree with the Eastern market.

Use for Carbon Black

With a field that was quickly developed into the greatest single natural gas field in the world, the carbon black plant with its accompanying natural gasoline plant, was the only solution of the situation. And today the greatest carbon black manufacturing area in the world is in the Monroe Gas Field.

Natural gas, for carbon black plants, commands a very low price in comparison with other industrial uses, especially domestic uses—and thus an interesting side-light is thrown on the natural gas situation in Louisiana.

A great deal of new development work is going on in the Rocky Mountain area—and while this region is producing only about 3.5 per cent of the country's output of natural gas, the importance of this product to this area is far greater than the small percentage would indicate.

As an oil producing, oil refining and natural gasoline State, California has made remarkable progress in the last few years— and its natural gas industry has also grown, as the following output figures show:

Year—	Cubic feet	Value
1921	75,942,000,000	$16,496,000
1922	84,580,000,000	17,898,000
1923	131,434,000,000	22,787,000
1924	189,692,000,000	35,949,000

Obviously the "flood" of oil and gas in California did not affect the producers of gas as seriously as it did the producers of oil, as the output of gas more than doubled in the 4-year period—and the value also more than doubled.

Output Increased

During the last 4 years the output of natural gas in the United States has increased—and shifted.

Year—	Cubic feet
1921	662,052,000,000
1922	762,546,000,000
1923	1,006,976,000,000
1924	1,141,521,000,000

With 70 per cent of the population living east of the Mississippi, the slow decline of the eastern fields and the large increase in the southwestern fields, together with the economic barrier that separates them, so far as natural gas is concerned, are factors that are having a tremendous influence on the regional development of the industry.

GASOLINE DEMAND IN CALIFORNIA RUNNING AHEAD OF LAST YEAR

LOS ANGELES, Calif., May 15.—Gasoline consumption in California is running well ahead of last year, notwithstanding the fact that climatic conditions have been far less favorable. Sales tax figures indicate the distribution of gasoline during the first quarter of 1926 was 15 per cent greater than during the first quarter of 1925 and 29 per cent in excess of similar figures for the corresponding period of 1924. Sales during the first quarter of 1925 were 11 per cent larger than those of the same time in 1924. The actual sales during the first quarter of 1926 were 199,495,068 gallons, while similar figures for 1925 and 1924 were 172,453,870 gallons and 154,699,777 gallons respectively.

All the major companies registered gains over the first quarter of 1925, although the Standard, Union and Associated showed a slight drop in 1925 from their respective sales during the first quarter of 1924. The Richfield and Pan American, by their aggressive sales policy, showed unusually large gains, not only during the first quarter of 1926 but during 1925 also. Sales of the Richfield Oil Co. jumped from 7,477,395 gallons during the first quarter of 1924 to 16,581,048 gallons for the corresponding period of 1925 and 27,294,703 gallons in 1926. This concern, however, does not adhere to the regular differential allowance quoted by other major refiners to resellers of 4 cents per gallon but allows 5 cents per gallon instead. Most of Richfield's sales are made through independent retailers and the marked preference shown is of course quite obvious. The company has been a consistent advertiser and this has no doubt also been a very important factor in stimulating sales.

The Pan American has shown a very satisfactory growth and its ability to continue expanding at the present rate is dependent to some extent upon an adequate crude supply. The company has unlimited possibilities for expansion of sales as distribution has not yet become statewide. It is logical to assume that future expansion will continue. The California Petroleum is another aggressive concern and, while it did not register a very large increase in gasoline sales between the first quarter of 1925 and 1926, this was due to the fact that no heavy expenditures were made in establishing additional stations. This company has a good crude oil reserve and will no doubt become a very important factor.

The Shell Co. sold 32,307,006 gallons of gasoline during the first quarter of 1926, compared with 26,775,007 gallons and 25,507,891 gallons during the first quarter of 1924 and 1925. This was an increase and was no doubt due to the introduction and distribution of quick starting high gravity gasoline testing around 61 degrees. Neither the Standard nor Union made any unusually heavy installations of station equipment but these two companies have always shown good profits and their future crude oil reserve will permit them to augment present distributing facilities to advantage when the existing inadequate prices become more favorable. The General Petroleum has shown a consistent gain in sales and will undoubtedly continue to do so, although it is quite possible this company, because it disposes of its products through resellers, may come into direct competition with the Richfield Oil Co. One can not but become impressed with the necessity of building up adequate future crude oil reserves when comparing the refined oil sales of each company as future distribution may become dependent upon this source of supply sooner than anticipated.

CALIFORNIA GASOLINE SALES

Company—	First Quarter of 1924	1925	1926	Gain Over 1925 Gallons	Pct.
Standard Oil Co.	48,530,753	47,094,063	49,698,539	2,604,476	5.53
Shell Oil Co.	25,507,891	26,775,007	32,307,006	5,531,999	20.66
Richfield Oil Co.	7,477,395	16,581,048	27,294,703	10,713,655	64.62
Union Oil Co.	20,293,734	19,504,025	22,728,280	3,224,255	16.53
Associated Oil Co.	19,557,127	19,341,950	20,487,367	1,145,417	5.92
California Petroleum Co.	4,832,726	7,087,753	7,962,210	874,457	12.34
General Petroleum Co.	3,700,095	5,128,158	7,371,049	2,242,891	43.74
Pan American Petroleum Co.	58,172	2,600,079	6,447,650	3,847,571	147.98
All others	24,742,884	28,341,787	25,198,264	*3,143,523	*11.09
Total gallons	154,699,777	172,453,870	199,495,068	27,041,198	15.68

*Loss.

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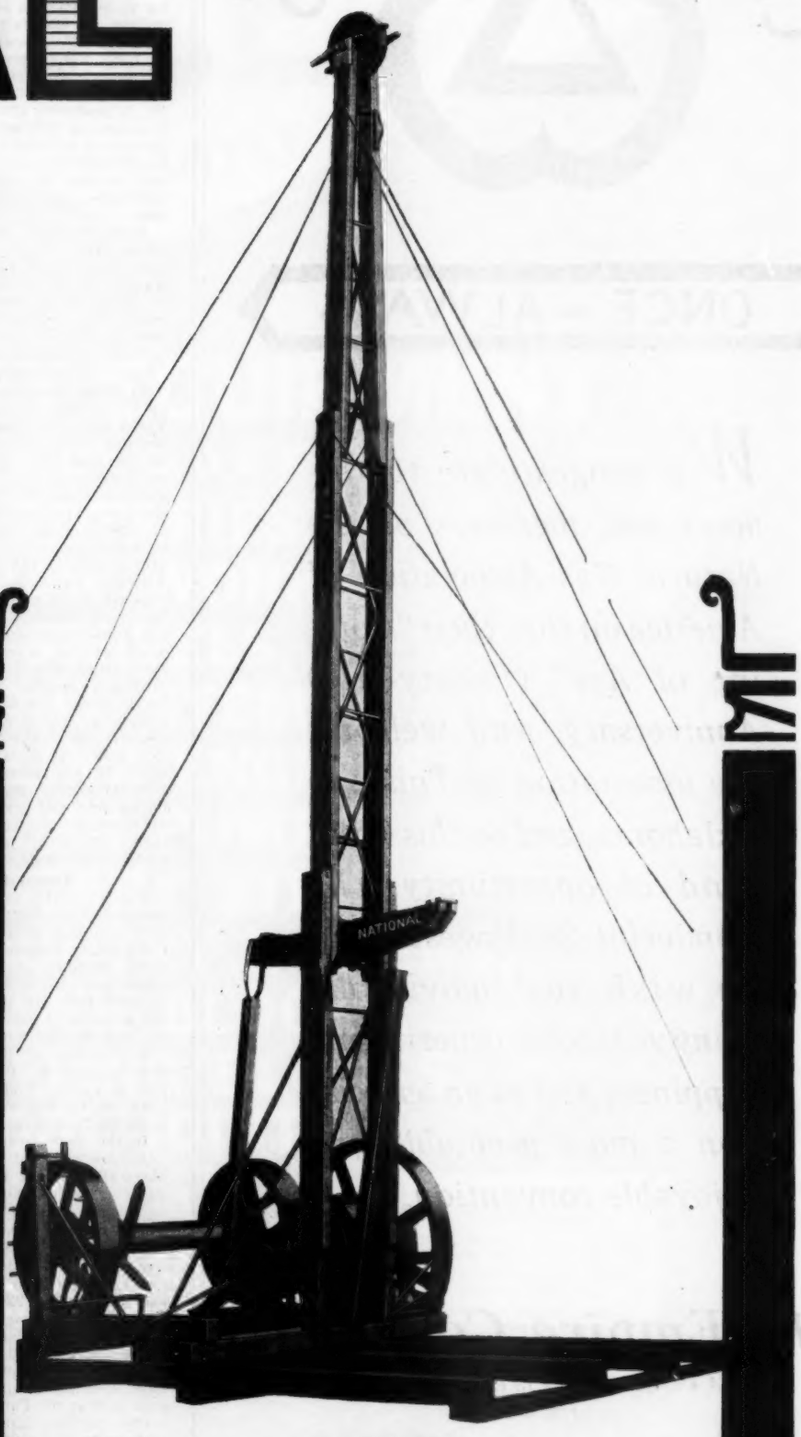

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Recommended Capacity 2500 Feet

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ONCE - ALWAYS

WE congratulate the officers and members of the Natural Gas Association of America on this, their "Coming of Age" (twenty-first) Anniversary, and welcome the association to Tulsa, to Oklahoma, and to this great land of opportunity, the wonderful Southwest. May we wish you individually many years of prosperity and happiness and as an association a most profitable and enjoyable convention.

The Empire Companies

A Complete Cycle in the Oil and Gas Industry

General Office—Bartlesville, Okla.

VENEZUELA FIELDS

(Continued from Page 62)

and shut down; No. 9, swabbing about 500 bbls.; No. 10, producing 580 bbls. by heads; No. 11, location only; No. 12, swabbing about 500 bbls.; No. 13, location only; No. 14, sanded and rigging up with standard tools; No. 15, pumping 75 bbls.; No. 16, producing 250 bbls. by heads; No. 17, swabbing 100 bbls.; No. 18, sanded and shut down; No. 19, abandoned shallow gas blowout; No. 19-A, preparing to set 8¼-inch casing at 2,090 feet; No. 20, flowing 1,300 bbls.; No. 21, rebuilding derrick; No. 22, flowing 600 bbls.; No. 24, flowing 2,600 bbls.; No. 27, building foundations; No. 28, flowing 1,900 bbls.; No. 29, preparing to set 8¼-inch at 2,060 feet; No. 30 drilling at 825 feet; No. 31, building rig; No. 32, preparing to set 10-inch at 1,789 feet; No. 33, rigging up; No. 34, derrick completed; No. 35, building foundations; No. 36, location. Michigan No. 1, producing 125 bbls. by heads; No. 6, producing 275 bbls. by heads; No. 8, 10-inch cemented at 1,405 feet; Rodriguez No. 7, pulling 6-inch liner will plug bottom to shut off water; No. 9, flowing 6,300 bbls., came in March 14, for 10,000 bbls.

Ambrosio Field.—Rodriguez No. 2, producing 175 bbls. by heads; No. 4, cemented at 1,460 feet to shut off edge water; No. 6, flowing 4,500 bbls., came in March 6 for 6,000; No. 8, derrick completed; No. 10, preparing to set 12½-inch at 871 feet; No. 12, rigging up.

Total production, 19,980 bbls.

El Mene Field

El Mene production seems to remain at about the old figure of 7,000 bbls. There are six strings drilling and two cleaning. The working wells were: No. 38, cleaning with rig; No. 101, cemented at 1,550 feet; No. 103, cleaning with standard tools; No. 107, drilling at 1,170 feet; No. 111, rigging up; No. 108, dry at 1,150, moving tools; No. 109, drilling at 1,150 feet, due in at any time; No. 110, drilling at 175 feet. There are two wildcats, La Ceiba, which is running 8¼-inch casing at 1,990 feet, and Mauroa No. 1, a Standard Oil location, which has derrick completed about 3 kilometers south of the proven field. They will spud about May 1. The wells actually producing number 48, of these 11 are on the pump. In addition to the 48 now producing, 29 wells are waiting to be cleaned out. The railroad is finished and steel laid to kilometers 38 and the other 16 kilometers, are about 60 per cent completed. Storage consists of two 55,000-bbl. and two 15,000-bbl. tanks at Estacada, the port on the lake, and three 55,000-bbl. and two 10,000-bbl. tanks at El Mene.

Concepcion Field

The V. O. C. had the following rigs working: No. C-21, deepening at 2,010 feet, sand was tested at 1,900 feet; No. C-24, fishing for packer, will deepen; No. C-26, drilling and running 4-inch at 2,060 feet; No. C-28, drilling open hole at 2,080 feet; No. C-29, shut down waiting 4-inch at 1,400 feet; No. C-30, drilling and running 8-inch at 800 feet; No. C-31, drilling at 910 feet; No. C-32, clearing ground. Production appears to still be around 3,500 bbls. per day.

In the La Paz Field the V. O. C. expects its No. 16 in at any time.

In the Mene Grande Field no completions are reported and the opinion in Maracaibo is that production has fallen off to about 20,000 bbls.

Mene Grande

The Mene Grande Field of the Caribbean Petroleum at this date has 77 producing wells of which only 4 are on the pump. Production remains just about the same, being 22,100 bbls. of 19 degrees with the exception of two wells producing 2,100 bbls. in the Pauji shale whose gravity is 31. Since the opening of the Mene Grande Field, geologists have been practically unanimous in the opinion that the Pauji shale would prove barren, so this initial production there may prove to be of the greatest importance. Many are still of the opinion that geologists were correct in their assumption and that the present finding is only a stray. In the words of a geologist who has been in this field for several years, "oil just had not ought to be there." Four more wells are being deepened into the Pauji, so the near future will tell the story. Eight more locations have rigs building. The wells on which work is being done are: No. 76, at 3,004 feet setting perforated casing; No. 51, 1,690 feet, cleaning out to drill into the Pauji shale; No. 83, shutting off surface water before deepening; No. 59, 2,050 feet, producing 160 metric tons in the Pauji; No. 80, 1,200 feet, drilling in for production; No. 63, 2,185 feet, swabbing; No. 41, 1,760 feet, cleaning out to put on pump; No. 23, sidetracking bit; No. 52, 1,160 feet, cleaning out; No. 17, 896 feet, putting in 8¼-inch screen; No. 29, putting in perforated casing and swabbing; No. 73, 1,685 feet, bailing and cleaning out; No. 70, 1,650 feet, bailing and cleaning out; No. 78, 1,380 feet, deepening after test; No. 75, sanded, putting in screen; No. 81, came in as a big gasser, now producing about 100 tons; No. 82, sidetracking 20-inch; No. 85, 400 feet, 20-inch cemented; No. 86, 340 feet, 20-inch cemented. Production remains about the same at 22,000 to 24,000 bbls.

Wildcats

Venezuela Gulf's Geneva No. 1 has been held up with boiler trouble, but is drilling again at about 1,300 feet. Lago No. 1 at Lagunillas is drilling at 3,315 feet, an additional show of oil and gas is reported. Mali's No. 1 in Miranda, is laying water line to location. Lenan's No. 1 is drilling at 2,080 feet. El Menito's No. 2 is fishing at 2,089 feet. Mara's No. 6 is drilling at 963 feet. This well will be completed at about 1,200 feet.

Standard Oil of Venezuela. Agua Viva is added to the list of Standard failures, it being abandoned at 3,225 feet. La Danta No. 2 is drilling at 1,700 feet. Bisantote No. 1 is drilling at 2,000 feet. Agua Dulce is drilling at 1,500 feet. Pebiy is fishing at 2,800 feet. Monte Claro is drilling at 300 feet.

Standard Oil of California. Neogil No. 1, drilling at 3,725 feet. El Mamon No. 1, drilling at 1,653 feet. Lance No. 1, drilling at 706 feet, to be drilled to about 1,000 feet. La Novedad No. 2, drilling at 297 feet. Neopig No. 1, hauling material. A new location, Lance No. 2, will be drilled 825 meters south of Lango No. 1 which was completed for geological information.

Omnium's diamond drill test at Lesama is reported shut down at 2,200 feet. V. O. C. well at Sibucara has drilled through the cement and is at about 1,000 feet. El Mene Lagunillas No. 1 is drilling at 904 feet. El Mene Lagunillas No. 2 cemented 20-inch casing at 150 feet, drilling at 258 feet.

Venezuela Sun Co.'s structural well Onia No. 5 is drilling at 1,015 feet, to be completed at about 1,200 feet. Boscan No. 1 is drilling at 3,290 feet. Boscan No. 2 is drilling at 300 feet. A road is being built for a new location, Los Banos No. 3.

The Orinoco Oil, a subsidiary of the Pure Oil Co., is building rig for deep test at El Jobo, about 52 kilometers east of Alta Gracia, in the District of Miranda. The Omnium location at Lesama is at 2,200 feet, with 1,875 feet of 6¼-inch casing landed. It will complete to depth required in about two weeks. New England Oil at Pauji, is drilling No. 2 at 706 feet. British Controlled is drilling at 1,885 feet at La Ceiba, south of El Mene.

Harper McKee of the firm of Brokaw, Dixon, Garner and McKee, is parcelling Maxudian properties in the District of Paez in the Goajira Indian country.

H. H. Scott, formerly chief engineer of the Venezuela Gulf, has returned to Maracaibo to engage in contracting in association with W. S. Scott, well-known in the Mexican and Texas Mid-Continent fields.

Howland Bancroft and J. W. Stewart arrived from Caracas. It is understood that Mr. Bancroft will be in active charge of the Lago operations.

L. H. Klippel is in Maracaibo to take charge of its Atlantic Refining Co. diamond drill test near Carrasquero in the District of Mara. The well will be spudded in about May 7.

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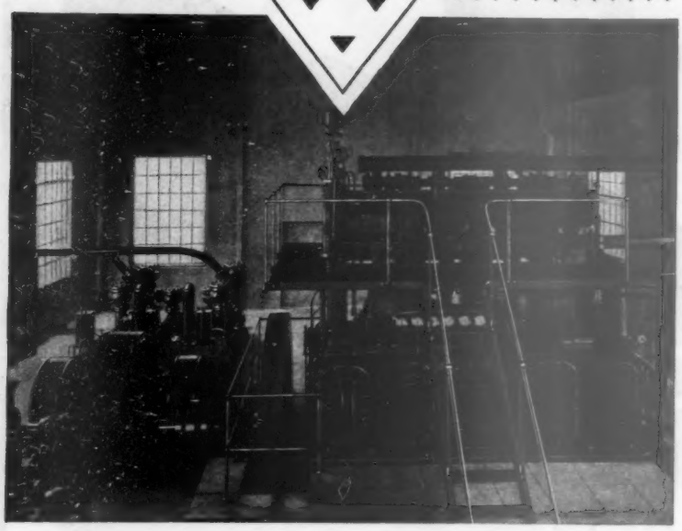
A 300-hp. Worthington 17 by 25 inch four-cycle three cylinder air injection Diesel engine installation in California oil pumping station, driving a 625 barrel-per-hour pump against a pressure of 750 lb. per sq. in. One of ten owned by the same company.



Harvesting the fruits of a million-dollar planting

In the firm belief that American engineers could build far more advanced Diesels than any built abroad, Worthington began to manufacture Diesels 20 years ago, and has kept at it continuously ever since. Worthington has willingly spent more than $1,000,000 in research and experimental work on Diesels. The fruits are now being harvested. Worthington Diesels are making records of reliability and endurance that are unequalled by engines built in any country.

In one run (power plant, City of Horton, Kansas) a Worthington Diesel worked for 201 days without a stop. It was then stopped only for a general inspection. This record could be duplicated by Worthington Diesels in daily service all over the country.

An immense marine Diesel just built by Worthington for the U S Shipping Board showed clean and consistent performance in the most severe endurance test any Diesel ever passed — a 30-day full-load continuous run, equal to three trans-Atlantic trips.

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CRACKING CAPACITY IS 980,960 BARRELS

(Continued from Page 40)

with the smaller yields of light end products.

Market Conditions

In this connection market conditions as well as type of cracking process and quality of charging stock determine the manner in which the cracking units will be operated. Developments in regard to prices are sometimes such that in a few plants, at least for a time, have operated their cracking units with practically no recycling of rerun stock. Later market conditions have changed so that the same units were operated with the view of obtaining all the gasoline possible from the cracking equipment. In the latter case shutdowns for cleaning out the stills are more frequent than when fresh charging stock is used and this is also a factor in capacity rating.

This will serve to explain in part why in the accompanying detailed report a few refineries have a larger capacity than skimming capacity. It should also be remembered that many refineries buy gas oil or other charging stock from refineries which do not have cracking equipment. In one eastern plant more gas oil is purchased for the cracking stills than crude oil for the skimming plant. Some of the larger companies with two or more plants often do all the skimming at one plant and then transport the residuum to other plants for cracking.

Not Operating at Capacity

Comparing the rated capacity and the known output of cracking gasoline, based on the Bureau of Mines monthly report, the conclusion is drawn that many cracking units are not operating capacity. In this regard the cracking situation is the same as that existing in regard to skimming in which for the entire United States the actual throughput of crude is approximately 25 per cent less than the rated capacity of the operating plants.

The latest available monthly report of the Bureau of Mines covering refinery operations for March of this year shows that 283,683,000 gallons were produced during the month. This is an average daily production of 217,882 bbls.

Subtracting 10 per cent from the rated cracking capacity of 980,960 bbls. to cover the cracking units under construction and the remaining 882,864 would represent the capacity of the units in operation during March. Based on this total the gasoline yield from the cracking units was 25 per cent. The writer would not attempt to estimate average gasoline yields covering all cracking processes but it is certain that the yield would have been greater had the cracking equipment been operating at capacity.

Cracking equipment, especially after it has been in operation for some time, requires considerable repair and this often prevents capacity operation. Insufficient charging stock, unfavorable market conditions and other developments also often cause refiners to shut down their equipment temporarily or operate part capacity. It is probable that this 25 per cent yield could have been doubled during March if all conditions had been favorable to the operation of the plants at maximum capacity. This indicates the possibilities from cracking in the future when still greater yields will be secured and when mechanical perfection and market conditions will make possible capacity operation at all times.

Cracking by States

Comparing crude and cracking capacities brings to light some interesting facts in regard to the relative importance of the several states in refining. The annual survey published in the May 6 issue of The Oil and Gas Journal shows that California leads all other states in crude capacity with a total of 728,800 bbls. daily for its operating plants. Texas is a poor second with a capacity of 531,500 bbls. daily.

The relative situation is changed considerably when the cracking capacities of the two states is added to the crude capacities. California has a cracking capacity of only 50,600 bbls. daily, while that of Texas is 225,750 bbls. daily, so that the total crude and cracking capacities of the two states is practically the same. California refiners are still slow in installing cracking equipment and the percentage of cracking to skimming capacity is far lower than other states with the exception of New Mexico. The latter has only a few small skimming plants with no cracking units.

The bulk of the cracking capacity of Texas is located at the Gulf Coast area. The Humble, Texas, Magnolia, Gulf, Sinclair and several smaller plants have greatly increased their cracking capacities during the past two years and that area is now the most important in United States in that phase of refining. Wyoming and the Indiana and Illinois areas also have large cracking capacities in relation to the crude throughput of their plants. In those areas the cracking capacity exceeds the skimming capacity at several refineries.

The largest number of cracking installations at refineries whose operations were previously confined to skimming during the past two years have been in the Mid-Continent area including Kansas, Oklahoma, North Central Texas, Arkansas and North Louisiana. Most of the 120 plants operating in that area have a skimming capacity of 5,000 bbls. or less.

In Kansas all but three of the eighteen operating refineries have cracking processes. In Arkansas five of nine operating plants have cracking equipment and Oklahoma 24 of the 48 plants have crackers.

Industrial Importance

The industrial importance of the cracking situation is clearly shown in the table giving the recapitulation by states. This shows that the skimming capacity of the 150 refineries with cracking processes totals 1,951,960 bbls. daily. The daily crude production of the United States last week, according to the weekly estimate, was 1,997,313 bbls. daily, including refinable and nonrefinable oils. The total also closely approximates the actual crude runs to stills of domestic and imported crude during March as shown by the Bureau of Mines report. In other words, cracking in refinery operations has expanded to the point where refineries with that equipment could skim all the refinable crude needed in United States. This fact sustains the contention of those who have maintained that gasoline prices today are determined on a basis which takes into consideration both skimming and cracking costs.

CHANGES ARE NEEDED IN GAS ASSOCIATION

(Continued from Page 70)

and at least interesting to you. Any member of the entertainment and reception committee will be glad to show and explain any phase of our business that you may wish to investigate.

In our field operations, we do things perhaps somewhat differently than you do in the other gas producing areas. Some companies, for instance, have worked out a plan which they believe guarantees absolute fairness to producers in the amount of gas taken from their respective wells each month. In each district a certain percentage is decided upon at the beginning of every month. This percentage, which is based upon the actual open flow of the wells is used as a standard in each particular district and, as nearly as possible, enough gas to make that percentage is taken from each well in the district.

To accomplish this result, the men in the field offices have to keep strict watch over the daily deliveries from the wells and each day figure the percentage that already has been taken.

In figuring these percentages a daily accumulated total of deliveries is kept on each well, and that figure is divided by the monthly open flow of that particular well to give the per cent to date.

Conservation and Waste

Under the conservation rules of our Corporation Commission, the maximum amount of gas that can be taken from a well in any one day is 25 per cent of

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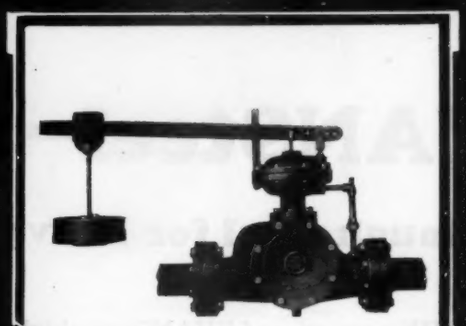

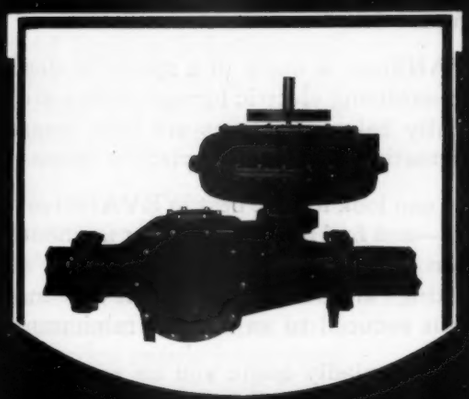

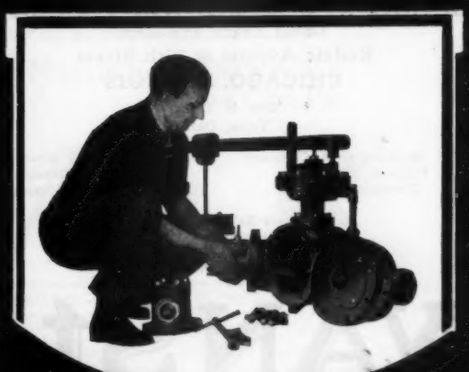

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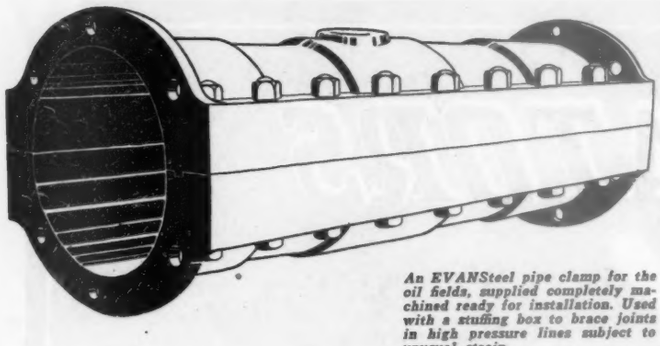

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the open flow. In Osage County which is under the supervision of the United States Government, the maximum is 20 per cent.

To eliminate the waste which is caused by taking the open flow each month, the Corporation Commission of Oklahoma is now trying to bring to the natural gas industry a method of determining the amount of gas that can be taken from a well daily, without having to blow the well, and a paper on this question is to be brought to your attention during this convention which should be of vital interest to all of you who are interested in the conservation of natural gas. We, in the Southwestern district, believe that this new method of taking the percentage of open flow is a step forward in the natural gas industry as to conservation.

A closer co-operation of this association with the Bureau of Mines and Bureau of Standards, who have already been of great value, will lead to the adoption of more practical methods on conservation and the revision of theories that are impractical.

All companies are showing more activity in the methods used to preserve the pipe lines. Some companies are taking up lines that have been laid 10 to 15 years, cleaning and painting, then relaying them. New methods have been devised for cleaning and painting pipe. One company has a furnace at their general warehouse, where they heat the pipe, clean and paint it while the pipe is hot.

I believe you also might be interested in what we have accomplished in the way of using mud-laden fluid for controling gas wells in order to allow oil producers to drill to lower sands.

Use of "Lubricator"

We have had, in Oklahoma, wells that tested from 80,000,000 to 100,000,000 cubic feet of open flow. And we have been able to halt the flow of gas entirely by the use of what we call a "lubricator" filling up the wells with a 12 to 20 per cent solution of mud and water. The amount of mud-laden fluid to be absorbed by the sand or sands which are not cased off.

We know from personal experience that there is no well too large in volume of rock pressure but can be killed by the use of mud-laden fluid, if we have in the hole even one string of casing on which to attach a Bradenhead or "lubricator," in order to pump into the well a 20 per cent solution of mud and water. This process we call "lubricating" the well.

When a string of casing is not entirely holding a well, we have been able to run in a string of 3-inch pipe perforated at the bottom and with a Bradenhead on the top; then start the mud down through the 3-inch, which is equipped with a check valve at from 100 to 200 feet from the bottom. This check valve is to keep the inside of the tubing clear of mud after you have finished lubricating. The mud is pumed down through the 3-inch and it eventually will begin to appear at the top through the Bradenhead, having crept up outside the 3-inch pipe between it and the larger casing. By cracking the gate valve enough to permit the mud to advance up the hole, but not enough to do away with back pressure, it is only a short time until the mud being supplied through the perforation in the 3-inch pipe will kill the flow of gas entirely.

Then, if no oil is found at the lower depth after the conquered gas sand has been cased off, it is possible to pull the casing up to expose the gas sand again, and bring the well back as a gas producer. It has been our experience, that in virgin territory a well can be brought back to its normal volume and rock pressure within a short time.

Does Not Harm Production

We also have lubricated a well again after once bringing it back, have drilled 300 to 400 feet deeper and have not had a blowout. In order to accomplish this successfully we have kept putting in a small amount of fluid each day as the fluid already in the hole settled from the top. In other words, we have kept the hole continuously full of mud-laden fluid. We then have brought such a well back into an excellent gas producer. One well had 40,000,000 cubic feet of volume with 880 pounds rock pressure both before and after the operation. In the case of lubricating a second time, however, we had to blow the well for three days before we could put the gas into the line. It required that length of time to exhaust the fluid that had backed up into the sand.

It sometimes occurs that a large volume of gas is encountered unexpectedly when drilling in a hole that carries no casing except a short piece of conductor pipe. The method of procedure in such a case is to drill on through the gas sand and then run 8 or 10-inch pipe, depending upon the size of the hole, setting the pipe on the bottom and filling it with mud-laden fluid. Then, while the pumping operation is in progress, we raise the pipe slightly and, by equalizing the mud on the inside and outside of the pipe, kill the gas off entirely. In running the casing, the largest diameter of pipe that is possible to be used should be put in the well. If you run 6-inch casing, for instance, in a 10-inch hole and try filling the 6-inch pipe with mud, the weigth of your column of mud will not be sufficient to overcome the gas and a blowout will result.

We also have had considerable experience in the putting out of gas fires. In the past 18 months we have had three or four large gas wells struck by lightning. We have been able, by the use of solidified glycerin, to extinguish these dangerous and expensive well fires within a few hours. One burning well with a volume of 100,000,000 cubic feet and producing through a 10-inch hole was extinguished four hours after an expert shooter had arrived. A great deal has been accomplished by the use of solidified glycerin as compared to the old methods of hoods or smothering fires with steam from a battery of boilers.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended May 8, totaled 1,312,000 bbls., a daily average of 187,428 bbls., compared with 1,121,000 bbls., a daily average of 160,143 bbls. for the week ended May 1, and a daily average of 191,643 bbls. for the four weeks ended May 8.

	Week Ended May 8
At Atlantic Coast Ports:	
Baltimore	95,000
Boston	250,000
New York	308,000
Philadelphia	130,000
Others	188,000
Total	971,000
Daily average	138,714
At Gulf Coast Ports:	
Galveston district	113,000
New Orleans and Baton Rouge	228,000
Total	341,000
Daily average	48,714
At all United States Ports:	
Total	1,312,000
Daily average	187,428
Daily average 4 weeks ended	191,643

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended May 8 totaled 813,000 bbls., a daily average of 116,142 bbls., against 824,000 bbls., a daily average of 117,715 bbls. for the week ended May 1, and a daily average of 98,607 bbls. for the four weeks ended May 8.

	Week Ended May 8
At Atlantic Coast Ports:	
Baltimore	475,000
Boston	75,000
Philadelphia	125,000
Others	78,000
Total	753,000
Daily average	107,571
At Gulf Coast Ports:	
Port Arthur and Sabine District	60,000
Daily average	8,571
Ttl. Atlantic and Gulf Coast ports	813,000
Daily average	116,142
Daily average 4 weeks ended	98,607

MEXICAN WILDCAT REPORTED

NEW YORK, May 15.—Reports have been received from the State of Chiahas, Mexico, of the discovery within 20 miles of Textla Gutierrez, the state capital, of indications of oil deposits. This is said to be the first discovery of petroleum in that part of the republic.

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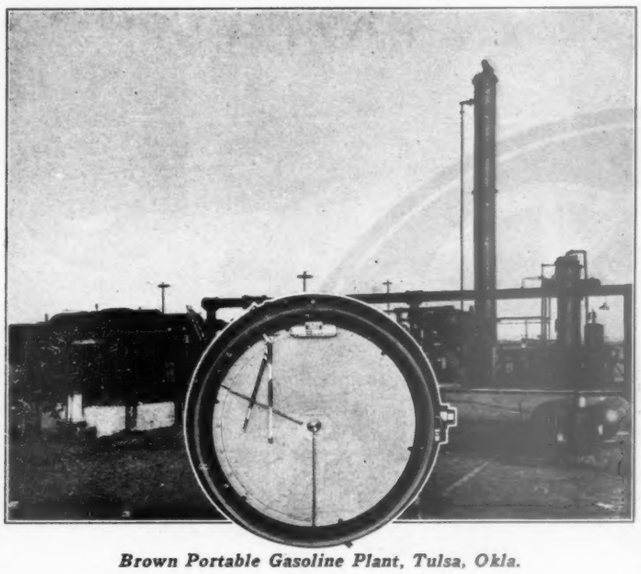

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THE COMPASS OF INDUSTRY

ENGINEERS MAKE REPORT ON CHICKASHA FIELD

(Continued from Page 112)

it, namely, to shut off water, or it may be set too low, thereby sealing off productive formations. An error in the log may result in drilling into bottom water. Frequently, in measuring casing, the run of the over all measurements of joints is given as the length of casing in the well. and no allowance is made for the threaded portions which are screwed into the collars. As a result, the recorded length of the casing string is longer than the actual or screwed-up length. Too often an accurate tally is not made of the measurements of joints of casing composing a string in a well. It is obvious that a correct shut off can not be made unless the exact length of the casing is known.

In order to be certain that a string of casing is accomplishing its purpose, the landing depth of the shoe must be determined by accurate recorded measurements and the shoe must be so placed. A good shut off is essential to obtain the maximum recovery of oil and gas and to prevent injury to the adjoining property, and to the field by water invasion.

Coring

The use of the core barrel in bringing to the surface a true sample of a formation penetrated, has increased during recent years and is now recognized as a valuable factor in the drilling of any oil or gas well. This is particularly true in the early development of a field. At such a time the results of good coring work will indicate the proper program for future drilling to an important degree and with compensating returns. The information obtained from a properly taken core is far more exact than that gained by observation of drilling cuttings, even when the log is compiled under favorable conditions. This is especially true when rotary tools are used and particularly so when it is necessary to use heavy mud fluid as at Chickasha.

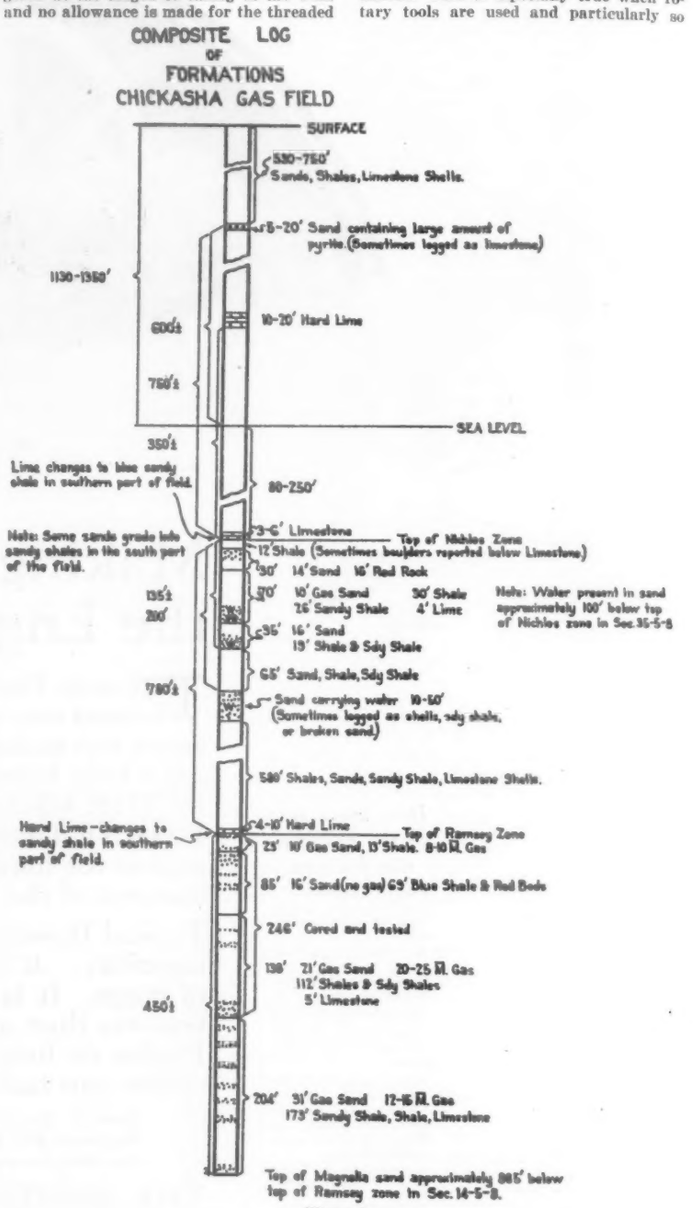
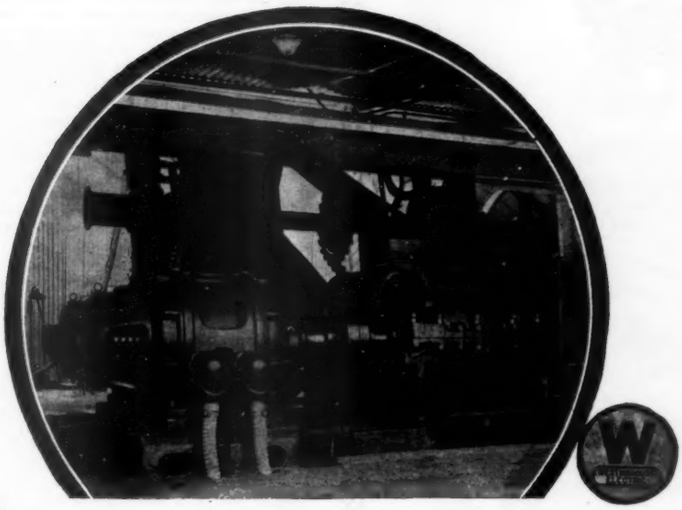

COMPOSITE LOG
OF
FORMATIONS
CHICKASHA GAS FIELD
SURFACE
530-750'
Sands, Shales, Limestone Shells.
5-20' Sand containing large amount of pyrite. (Sometimes logged as limestone)
1130-1350'
600±
10-20' Hard Lime
750'±
SEA LEVEL
350'±
Lime changes to lime sandy shale in southern part of field.
80-250'
3-6' Limestone
Top of Nichles Zone
Note: Some sands grade into sandy shales in the south part of the field.
12' Shale (Sometimes boulders reported below Limestone)
30' 14' Sand 16' Red Rock
135'±
200'
70' 16' Gas Sand 30' Shale
26' Sandy Shale 4' Lime
Note: Water present in sand approximately 100' below top of Nichles zone in Sec. 35-5-8
36' 14' Sand
19' Shale & Sdy Shale
65' Sand, Shale, Sdy Shale
780'±
Sand carrying water 10-50'
(Sometimes logged as shells, sdy shale, or broken sand)
580' Shales, Sands, Sandy Shale, Limestone Shells.
4-10' Hard Lime
Top of Ramsey Zone
Hard Lime - changes to sandy shale in southern part of field.
23' 10' Gas Sand, 13' Shale. 8-10 M. Gas
85' 16' Sand (no gas) 69' Blue Shale & Red Beds
246' Cored and tested
138' 21' Gas Sand 20-25 M. Gas
112' Shales & Sdy Shales
5' Limestone
450'±
204' 31' Gas Sand 12-16 M. Gas
173' Sandy Shale, Shale, Limestone
Top of Magnolia sand approximately 885' below top of Ramsey zone in Sec. 14-5-8.

Figure 2.

Coring has been done in a number of wells in the Chickasha Field, but coring apparently has not been done completely enough in the field as a whole to furnish accurate information on the thicknesses and positions of the important formations in the producing zones. In several wells, many cores were taken and accurate records kept and those are the only accurate data available for formulating a definite idea of the detailed characteristics of the underground strata. It is essential that the depth at which cores are taken should be accurately determined.

Two general types of core barrels may be used for obtaining cores, the single barrel and the double barrel. (For further discussion see Kirwan and Swigart's report on the Chickasha gas field.)

The single-barrel type is commonly made in the field by cutting saw teeth



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in a piece of drill pipe. With this type only a short length of core, not more than a foot can be taken and the type has economic advantage only in a field where the underground stratigraphy is already known. Its advantage lies in the fact that a short core can be quickly taken to assure the driller and operator that the well is drilling in a formation, whose stratigraphic relations have been determined by the correlation of well records and by the study of the stratigraphy of the area in which the well is located.

Several efficient makes of the double-barrel type are in use at the present time. Usually, longer cores can be taken with this type, under favorable conditions some cores from unconsolidated formations average as much as 12 feet per core. On account of its use in obtaining long cores the double-barrel type is more adaptable than the single-barrel for coring new formations and in developing new fields. A few representative wells in a field, if cored continuously for a short distance above and through the productive horizones, will furnish records which will be valuable in carrying on development.

Cementing

Except at the discovery well, the water string in every well in the Chickasha Field was cemented. The amount of cement used varied. During the early life of the field, 35 to 40 sacks were utilized in cementing casing above the Nichlos zone; later, 75 sacks was the average amount put in a well. From 60 to 200 sacks, and sometimes more, are used in cementing a water string above the Ramsey zone.

Where casing is set above the Ramsey zone, and none above the Nichlos zone enough cement should be used to reach above the top of the Nichlos zone as already suggested.

Gas Analyses

Table 9 contains analyses of gas from the Nichlos and Ramsey zones and from the Magnolia sand. It will be noted that gas from the Ramsey zone has the highest B.t.u. content. Small variations occur in the analyses of samples taken from the same sand in different parts of the field.

Table 9—Analyses of Gas From the Chickasha Field

	Nichols Zone	Ramsey Zone	Magnolia Sand
Methane	86.20	95.35	70.37
Ethane	7.21	3.06	6.60
Carbon dioxide	0.00	0.95	0.58
Oxygen	0.80	0.64	0.73
Residue (Nitrogen largely)	6.59	....	21.22
Total	100.00	100.00	100.00
Net B.t.u.	959	1,072	878

Thus far, only one compressor plant has been installed in the field. The Oklahoma Natural Gas Co. has a plant consisting of five 450 horse power units unstalled in the northeastern part of the field and is pumping approximately 15,000,000 feet of low-pressure gas a day.

Estimate of Recoverable Reserves

Past experience has shown that the method for determining gas reservoirs applicable to any field depends upon various factors. An intimate knowledge of field conditions, field methods, rock pressures and amount of gas withdrawn (which would include fairly accurate estimates of the amount blown into the air) are necessary before any estimate of the recoverable reserves can be made.

Nichlos Zone

Two methods were used in arriving at the estimates, the saturation method and the volume pressure method. They are discussed below.

1. Saturation method.

Total estimate productive acreage, 3,290 acres; total thickness of productive sand, 40 feet.

Because of water appearing in the top of the zone and also in the bottom, the present total productive thickness of the sand is estimated at 25 feet. Porosity is taken as 20 per cent. This porosity is one generally used and is an average of a large number of porosity tests.

Total gas produced to January 1, 1926, 12.1 billion cubic feet. (Includes an estimate of the amount used in drilling and blown to the air.

Initial rock pressure, 525 pounds.

Based on the above figures, the following estimates were obtained:

Total estimated original volume, 41.1 billion cubic feet.

Based on 3,290 productive acres; 40 feet thickness of sand; 20 per cent porosity.

Estimated recoverable gas based on 60 per cent, 24.7 billion cubic feet recovery.

Estimated recoverable remaining volume, 12.6 billion cubic feet (24.7 billion cubic feet minus 16.1 billion cubic feet.)

2. Volume pressure method.

Total gas produced to January 1, 1925, 12.1 billion cubic feet. Original rock pressure, 525 pounds.

Present average rock pressure, 244 pounds. (Based on pressures taken by Bureau of Mines Engineers.)

Estimated total original volume, 23.3 billion cubic feet.

Estimated total of recoverable gas, 19.4 billion cubic feet.

Estimated total future recoverable gas, 7.3 billion cubic feet.

In estimating future recoverable gas, cognizance was taken of water conditions and future recovery was based on rock pressure declined to 75 pounds. This assumption does not imply that in certain areas wells will not produce at lower pressure.

The actual average rock pressure in the Nichols zone at the present time is believed to be higher than the one used in the volume pressure determination. During periods of greatest withdrawal, the rock pressure in the producing sands, near the producing wells are lower than are the rock pressures at some distance from the wells.

A more accurate average rock pressure is obtained after the rate of withdrawal has decreased and pressures throughout the sand have become equalized as usually happens during the summer months.

Ramsey Zone

Sufficient data are not available at the present time to make an estimate based on volume-pressure relations. The main reasons for this are: (1) Variations in rock pressures because of unequal rate of withdrawal of gas from wells at the present time; (2) the comparatively small volume of gas which has been withdrawn from this zone; and (3) variations in rock pressure because of differences in amount of penetration. Undoubtedly the pressure varies in the different sands, hence the pressure of any well while it may represent an equalized rock pressure of the sands from which it is producing, will differ from the pressure of a well with greater or less penetration into the zone.

The reader will notice that a rock pressure of 900 pounds was taken as the initial rock pressure in the sand. Several wells were reported to have had a lower rock pressure than 900 pounds, and a higher pressure was reported for one well. It is believed that 900 pounds represents an average initial rock pressure for the zone, with reference to maximum penetration.

Saturation Method (Ramsey Zone)

Estimated production area, 3,960 acres.

Total thickness of productive sands, 61 feet.

Porosity of sand, 20 per cent.

Note: This is probably a little high, because the sands in some places are more nearly a sandy shale.

Total volume of gas produced, 2.973 billion cubic feet.

(Includes estimated amount blown and used for fuel.)

Initial rock pressure, 900 pounds.

Estimated original gas content of the zone, 128.0 billion cubic feet.

(Based on 3,960 acres productive acres; 61 feet thickness of productive sand, 20 per cent porosity.)

Estimated total volume recoverable gas, 64.0 billion cubic feet.

(Recovery estimated at 50 per cent. Productive limits not as well defined as in Nichlos zone, also more formations are produced from at the same time.)

Estimated volume of future recoverable gas, 61.0 billion cubic feet.

Magnolia Sand

Only two wells, approximately 300 feet apart, are producing from the so-called Magnolia sand. Rock pressures of the wells taken by Bureau of Mines engineers

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recently were 610 pounds on one well and 934 pounds on the other. The original rock pressures were reported as 1,040 pounds and 1,200 pounds, respectively.

Although only a small amount of gas has been withdrawn, this sand shows a large decline in rock pressure. Based on pressure volume relations, the future recoverable volume of gas will be relatively small.

However, wells drilled to this sand in more favorable locations on the structure may prove the sand to be more productive than is at present believed.

Summary

Estimated volume of future recoverable gas.

Nichlos zone: Saturation method, 12.6 billion cubic feet; pressure volume method, 7.3 billion cubic feet.

Ramsey zone: Saturation method, 61.0 billion cubic feet.

Magnolia zone: No estimate was made of the recoverable gas because, as far as is now known, it is relatively small.

It must be remembered that, while the total recoverable reserves are estimated at approximately 70 billion cubic feet, the life of the field will depend upon the rate of withdrawal, and also upon the care taken by the operators in completing wells, plugging off water and in the proper abandonment of wells within or near productive limits. Maximum efficiency will produce maximum results.

PROBLEMS OF THE EASTERN GAS FIELDS

(Continued from Page 104)

today it has 18 to serve its 2,000 miles of field lines. As fields became exhausted the compressing stations installed for these fields were abandoned. Some were moved to new fields, where this plan was practicable. Some were sold as junk.

A modern compressing station costs from $250,000 to $1,000,000. Gas is received from individual wells by 2, 3 and 4-inch pipes into the main collecting lines, which are 4 to 10-inch. These main collecting lines lead to a gas-compressing station, which getting the gas at natural pressure, compresses it to a higher pressure which forces it through the long miles of 12 to 36-inch transmission lines.

Without the compressing stations, the Equitable company, for example, would have just as much gas in its different fields as it has now, but the pressure would be so low and the flow so sluggish that Pittsburgh would have an insufficient supply. Naturally the pressure to which the gas must be compressed becomes higher the farther the stations are located from the city, so that while stations near Pittsburgh may have to compress gas to 70 to 100 pounds to the square inch only, it is imperative that the more distant stations, 200 miles away, say, compress the gas to a pressure of 250 or more pounds to the square inch.

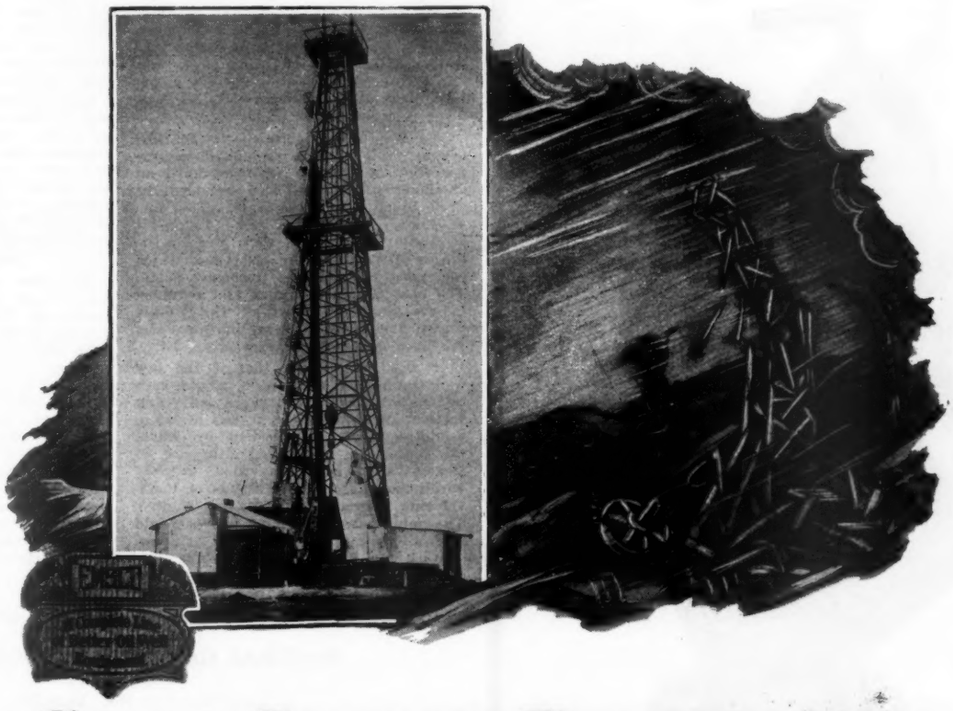
The 18 stations of the Equitable develop a total of more than 40,000 horsepower. Most of the compressors are driven by steam engines. In 1910 the company had five compressing stations. Seven years later it introduced the system of compounding pressure, that is, installing additional compressing cylinders to keep the pressure up to the stage required.

If Hercules had faced the task of getting equipment to some of these compressing stations in the West Virginia hills it is a pretty safe bet that he would have turned about and gone home. A person who never has seen what passes for roads in some of the regions penetrated by the seekers for gas cannot appreciate the difficulties that lie in the path of an expanding gas company, pushing on and on into districts sparsely populated by backward farmers. In many instances the station had to be built miles away from the nearest railroad, necessitating the hauling of equipment by teams. Feats of ingenuity, patience and strength were many. There is reason for the fear that the sum total of profanity was appreciably increased by some of the experiences undergone by working crews.

Besides the difficulties attending the drilling of wells, laying of lines, building of compressing stations and repairing of leaks in the pipe system, the company often went to the tremendous expense involved in extending lines to a new field, only to discover after a time that the field was a "flivver," quickly exhausted, with the result that all equipment that could be moved had to be taken up and removed to some other point. Many of the wells drilled proved dry holes, of course, in which case all the investment except that which could be reclaimed from the wells was a total loss.

It is only the larger companies that

Hauling 45-inch gas compressor cylinder, Shirley compressor station, Shirley, W. Va.



GULF COAST BATTERED BY 82 MILE GALE

Hundreds of WOODEN DERRICKS DESTROYED – Emsco is not trying to grab any of the glory – But what an achievement for STEEL DERRICKS

EMSCO
Derrick & Equipment Company
Los Angeles ▼ ▼ California.
Houston ▼ ▼ Texas.

REID
Receiving Boxes

THE REID RECEIVING BOX illustrated above is the development of years of experience in the manufacture of this and other refinery equipment.

The look windows are of polished wire plate glass, affording a clear view of the oil as it passes through. The circular glass illustrated is furnished where pressures of 10 to 15 lbs. are encountered, while where the pressures are low, not exceeding 5 lbs., rectangular glass is used. We can furnish either type.

A gas and oil tight cap on top affords access to the interior of the box. An easily removable screw clamp holds the cap firmly in place.

Waste gases are led away by a two-inch vent on the top.

This receiving box can be furnished with flanged connections for two, three or four-inch pipe.

Write for our Receiving Box bulletin

JOSEPH REID GAS ENGINE COMPANY
OIL CITY, PENNSYLVANIA, U. S. A.

BRANCHES AND AGENCIES: Marietta, Ohio; Logan, Ohio; Newark, Ohio; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Frick & Lindsay Co., Bradford, Pa., and Kentucky Distributors. S. R. Shoup, 708 Pacific Electric Bldg., Los Angeles, Cal., Frick-Reid Supply Company, Tulsa, Okla., and Branches, Distributors for Oklahoma, Kansas, Texas, Arkansas and Wyoming.

Export Sales Representatives:
OILFIELD EQUIPMENT CO., Inc.
30 Church St., New York City
BRANCH SHOP, TULSA, OKLA.

are able to undertake the hazards involved in prospecting for gas and getting it to the point of consumption many miles away.

Competition of States

The Equitable and other gas companies organized in Pennsylvania and Ohio, but operating in West Virginia also, encountered a legal dilemma that in the end seems to have settled a grave question for all time. West Virginia companies found it advantageous to sell their gas to these Pennsylvania and Ohio distributing companies, with a result that residents of West Virginia sometimes found themselves needing the gas which was produced in their own state, but was being sent into other states.

The West Virginia legislature in 1919 enacted a law which prohibited the exportation of any gas whatever until an abundant supply had been provided for those living within the state. This was known as the Steptoe Act. Before it became operative suits were filed by the States of Pennsylvania and Ohio, which contended the act was unconstitutional. The case has been argued and reargued in the Supreme Court of the United States, the State of West Virginia being the loser in every instance.

It was pointed out that if the law were to become effective it would ruin the natural gas industry in adjoining states. Its enforcement, it was declared, would establish a precedent by which the bituminous coal and anthracite of Pennsylvania could be kept entirely within the State until residents of Pennsylvania were assured of all they wanted. The middle west farming states could keep all their farming products at home.

With the constantly diminishing supply of gas in this state and the Equitable's policy of buying from independent producers in West Virginia as well as drilling new wells of its own, the decision in the case of the Steptoe act was of great importance.

The average life of fields in West Virginia now in process of development is placed at 10 to 12 years. To take care of the still steadily increasing demand for gas new fields must be found and new ways of conserving the supply adopted. Geologists have helped much in the finding of new fields by their conclusions drawn from conformation of the earth's crust and their anticipation of where producing gas sands may be pierced. But luck remains a mighty factor.

Deeper wells are being sunk in the hope of finding gas in paying quantities in strata formerly unpenetrated. Operations along this line by the Equitable and other companies of this region have not settled the question as to whether solution, or part solution, of the problem of diminishing supply is to be found in extraordinary deep wells.

Artificial Gas Aids

For those periods when the flow of natural gas is inadequate to meet demands the Equitable has established a modern artificial gas plant in Elrama, near the city, and in the biting cold weather of midwinter this plant "saves the day" for a shivering population.

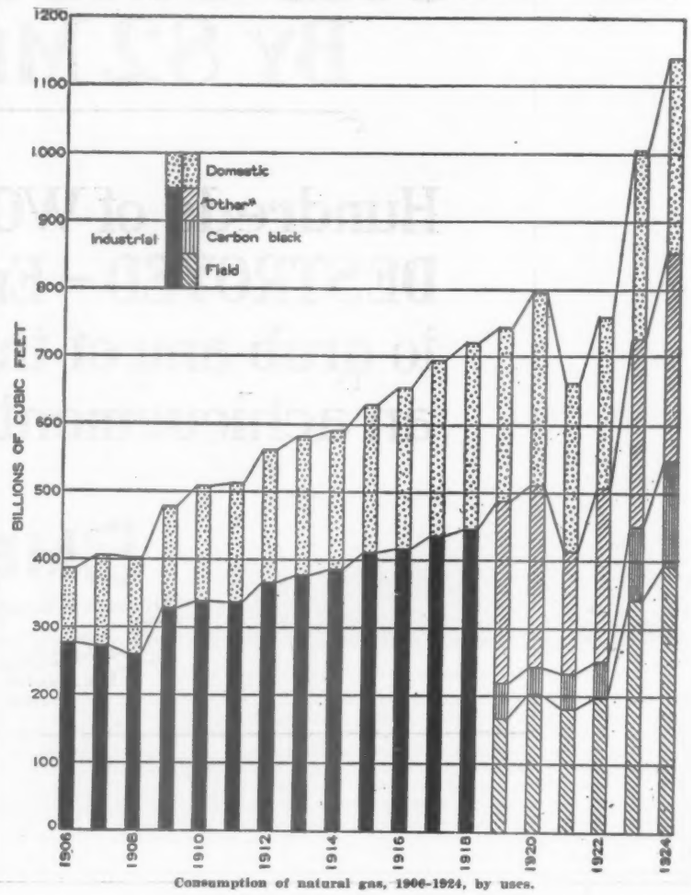
Here briefly are touched upon a few high spots only in the life of one gas company. Their relation may impart no thrill. There may seem nothing of the heroic or daring in it. But that may be because the heroism, the daring, have been forgotten in the eagerness to attain the one outstanding object of a public utility enterprise—making two persons comfortable where only one was comfortable before. Just another definition of "service."

NATURAL GAS CONSUMPTION IN 1924

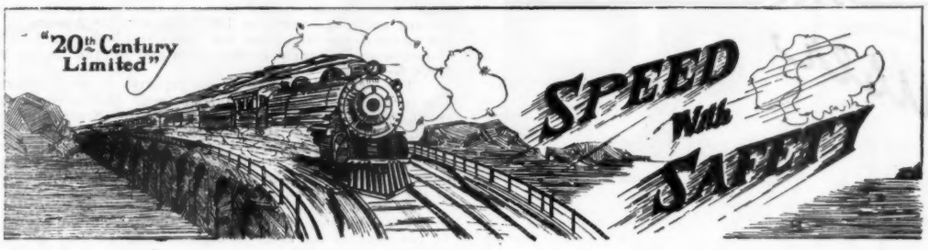
(Continued from Page 73)

38 per cent in 1921. Nevertheless, the total quantity of natural gas utilized by domestic consumers in 1924 increased 3 per cent and the number of domestic consumers in 1924 increased 209,600 to the record of 3,443,400.

The value at points of consumption of the natural gas utilized for domestic pur-



Consumption of natural gas, 1906-1924, by uses.



An Enviable Reputation

Farley-built Special Fishing Tools and Farley *On-Time* Service have gained an enviable reputation with the trade everywhere.

In all parts of the Mid-Continent field the consistent, trouble-free performance of Farley Equipment is constantly upholding the traditions and maintaining the high reputation of The House of Farley.

Write or wire us your needs for special equipment. Our accuracy in building and quick delivery will more than satisfy you.

Stems, Bits, Prosser Sockets and all kinds of Fishing Tools for sale or rent.

Cylinders Rebored, Pipe Threading and general oil-field equipment repair work.

Distributors of SWAN Underreamers, genuine Dick Balata Belt and Spang Weldless jars.

The Farley Machine Works Co.

Arkansas City, Kansas **Peabody, Kansas**

another user

The Empire Companies

THE Empire Companies found that Sheffield Sucker Rods proved entirely satisfactory in the severe salt water fields around El Dorado, Kansas.

SHEFFIELD SUCKER RODS

The perfected joint of the Sheffield Sucker Rod and the special analysis steel from which the rod and joint are made has given to Oil Producers a sucker rod that withstands the most severe usage. Made complete by a producer of steel in three sizes: ¾", ⅝" and ⅞" in both Box and Pin and Double Pin types.

Sheffield Sucker Rods may be secured direct from our plant or from all stores of the International Supply Company.

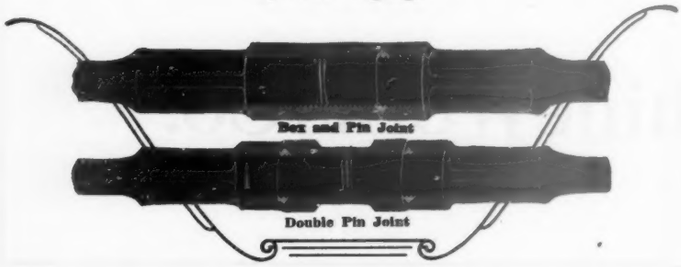
Sheffield Steel Corporation

Successors to

(THE KANSAS CITY BOLT & NUT COMPANY)

Kansas City, Mo.

Manufacturers of New Billet Reinforcing Bars, Rail Steel Reinforcing Bars, Blue Annealed Sheets, Merchant Steel Bars, Merchant Iron Bars, Bolt and Nut Products, Sucker Rods, Pull Rods, Track Spikes, Forgings



poses was considerably more than the value of the natural gas that was consumed industrially, although the volume of the latter was three times as much as that of the former. The average value of the natural gas consumed for domestic purposes in 1924 ranged from 29.6 cents per 1,000 feet in West Virginia to 91.2 cents in Missouri, and for the United States it increased to the record high of 54 cents, as contrasted with 51.4 cents in 1923 and with 38.2 cents in 1920. The average value of the natural gas consumed for industrial purposes in 1924 ranged from 2.6 cents in Colorado to 53.2 cents in Maryland and for the United States averaged 11.6 cents per 1,000 feet.

The quantity of natural gas reported as treated for recovery of natural-gas gasoline in 1924 was 1,016,276,000,000 feet. This is equivalent to 89 per cent of the total consumption of natural gas in the United States and contrasts with 87 per cent in 1923, 71 per cent in 1922, and 62 per cent in 1920. The growth not only shows increasing conservation of natural gas but indicates the near approach of the time when the available annual supply of gas, which until 1923 had been greatly in excess of the quantity treated for the recovery of gasoline, will be a controlling factor in the growth of the natural-gas gasoline industry.

In 1924 a total of 156,514,000,000 feet of natural gas was reported as consumed in the production of carbon black in the United States. This total is equivalent to 14 per cent of the total consumption of natural gas, and is almost three times the quantity consumed in the manufacture of carbon black in 1922.

SUMMARY OF STATISTICS FOR NATURAL GAS IN THE UNITED STATES, 1920-1924

	1920	1921	1922	1923	1924
Natural gas consumed:					
Domestic (millions of cu. ft.)	286,001	248,334	254,413	*277,050	285,152
Industrial—					
Carbon black (millions of cu. ft.)	40,599	50,565	53,629	109,096	156,514
Field (millions of cu. ft.)	202,108	182,305	197,850	343,076	393,437
Other industrial (millions of cu. ft.)	269,502	180,848	256,654	277,745	306,379
Total	798,210	662,052	762,546	*1,006,967	1,141,482
Domestic (per cent)	35.8	37.5	33.4	27.5	25
Industrial (per cent)	64.2	62.5	66.6	72.5	75
Treated for natural-gas gasoline:					
Millions of cubic feet	496,431	465,097	545,139	875,711	1,016,276
Per cent of total consumption	62.2	70.3	71.5	87.0	89
Domestic consumers (thousands)	2,615	2,631	3,015	3,234	3,443
Value of natural gas at wells:					
Total (thousands of dollars)	†	†	84,873	*100,849	105,779
Average per M cu. ft. (cents)	†	†	11.1	10.0	9.3
Value of natural gas at points of consumption:					
Total (thousands of dollars)	196,194	174,617	221,535	*239,995	253,830
Domestic (thousands of dollars)	109,302	110,337	126,902	*142,317	154,075
Industrial (thousands of dollars)	86,892	64,280	94,633	97,678	99,755
Average per M cu. ft.—					
Domestic (cents)	38.2	44.4	49.9	*51.4	54.0
Industrial (cents)	17.0	15.5	18.6	13.4	11.6
Domestic and industrial (cents)	24.6	26.4	29.1	23.8	22.2
By-products of natural gas:					
Natural-gas gasoline (raw)—					
Quantity (thousands of gallons)	384,744	449,934	505,832	816,226	933,861
Value at plants—					
Total (thousands of dollars)	71,788	61,815	72,711	77,268	82,233
Average per gallon (cents)	18.7	13.7	14.4	9.5	8.8
Carbon black—					
Quantity (thousands of pounds)	51,322	59,766	67,795	138,263	186,872
Value at plants—					
Total (thousands of dollars)	4,032	5,446	5,820	11,692	11,565
Average per pound (cents)	7.9	9.1	8.6	8.5	6.2

*Revised figures. †Figures not available.

INTERSTATE TRANSPORTATION OF NATURAL GAS, 1924

State in which gas was produced	State to which gas was transported	M cubic feet
Indiana	Kentucky	157,000
Kansas	Missouri	5,323,000
	Oklahoma	34,000
		5,357,000
Kentucky	West Virginia	1,678,000
Louisiana	Arkansas	6,908,000
	Texas	2,453,000
		9,361,000
New York	Canada	12,000
	Pennsylvania	24,000
		36,000
Ohio	Indiana	1,536,000
	West Virginia	1,149,000
		2,685,000
Oklahoma	Arkansas	705,000
	Kansas	20,305,000
	Texas	10,025,000
		31,035,000
Pennsylvania	Ohio	85,000
	New York	10,346,000
	West Virginia	3,289,000
		13,720,000
Texas	Arkansas	366,000
	Louisiana	11,885,000
	Mexico	27,000
		12,278,000
West Virginia	Kentucky	10,160,000
	Maryland	679,000
	Ohio	66,557,000
	Pennsylvania	31,765,000
		109,161,000
Wyoming	Montana	1,157,000
	Grand total	186,625,000

RANK OF STATES IN PRODUCTION AND CONSUMPTION OF NATURAL GAS, 1919-1924

State—	Utilized production—						Consumption—					
	1919	1920	1921	1922	1923	1924	1919	1920	1921	1922	1923	1924
Alaska	...	...	...	...	18	16	...	...	...	...	20	18
Arkansas	11	10	12	10	10	9	10	10	12	10	10	9
California	5	4	4	3	2	2	5	5	5	4	3	1
Colorado	18	18	18	17	21	18	20	20	20	19	22	19
Illinois	12	13	13	13	13	13	15	15	15	14	14	14
Indiana	14	14	14	14	15	15	14	14	14	15	15	15
Iowa	22	21	21	22	24	22	23	22	22	23	25	23
Kansas	8	8	8	9	9	10	6	8	8	8	8	10
Kentucky	13	12	11	12	11	11	11	11	11	12	11	11
Louisiana	6	6	5	5	5	4	8	7	6	6	6	5
Maryland	23	23	23	...	...	...	17	17	16	16	17	17
Michigan	21	22	22	20	22	21	22	23	23	21	23	22
Missouri	19	19	18	19	19	17	13	13	13	13	13	13
Montana	15	15	15	15	14	14	16	16	17	17	16	16
New Mexico	...	...	...	...	16	...	...	...	...	...	18	...
New York	9	11	10	11	12	12	9	9	10	11	12	12
North Dakota	20	20	20	21	23	23	21	21	21	22	24	24
Ohio	4	5	6	6	7	7	2	2	1	2	4	5
Oklahoma	2	2	2	2	2	1	3	3	3	3	1	2
Oregon	23	23	23	...	...	...	24	24	24	...	...	...
Pennsylvania	3	3	3	3	4	6	1	1	3	1	2	4
South Dakota	17	16	17	16	17	19	19	18	19	18	19	20
Tennessee	16	17	16	18	20	20	18	19	18	20	21	21
Texas	7	7	7	7	6	5	7	6	7	7	7	6
West Virginia	1	1	1	1	1	3	4	4	4	5	5	7
Wyoming	10	9	9	8	8	8	12	12	9	9	9	8

STATISTICS OF NATURAL GAS IN THE UNITED STATES, 1914-1924

Year—	Produced and delivered to consumers (billions cu. ft.)	Treated for recovery of natural gas gasoline. Billions of cubic feet	Per cent of total consumption	Domestic consumption— Number of consumers (thousands)	Billions of cubic feet	Pct. of total consumption	Average value at points of consumption per M cubic feet (cents)
1914	592	17	3	2,078	203	34	28.0
1915	629	24	4	2,195	217	35	28.3
1916	753	209	28	2,362	235	31	28.6
1917	795	429	54	2,431	258	32	30.8
1918	721	449	62	2,509	271	38	31.4
1919	746	480	64	2,501	256	34	34.6
1920	798	496	62	2,615	286	36	38.2
1921	662	465	70	2,631	248	38	44.4
1922	762	546	71	3,015	255	33	49.9

HOPE

ENGINEERS & CONTRACTORS IN NATURAL GAS AND OIL

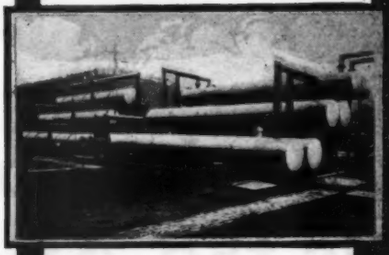
HOPE Service to the oil and gas industries includes engineering counsel, design, construction and contracting—in pipe lines for oil or gas, oil pumping stations, gas compressing and boosting plants, gasoline recovery systems, city and inter-city gas mains.

It is a service based upon 20 years of specialization upon the problems of the oil and gas industries. Hope-designed and Hope-built plants are operating wherever oil or gas is found—efficiently, economically, profitably.

In this field, the Hope Company is the one organization qualified and equipped and ready to assume entire responsibility, from preliminary design to completed work.

No job is too small to interest the Hope Company—no job too large or too distant for it to handle with speed and economy. Our experience and resources are at your disposal.

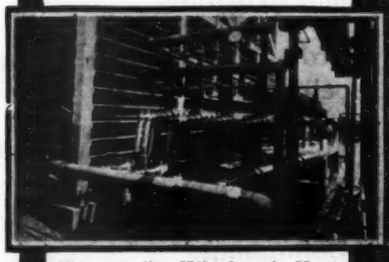
A record of 14,780 ft. of 12-in. pipe laid in one day was made on this 68-mile line.



Absorbers are a part of the equipment the Hope Company furnishes.

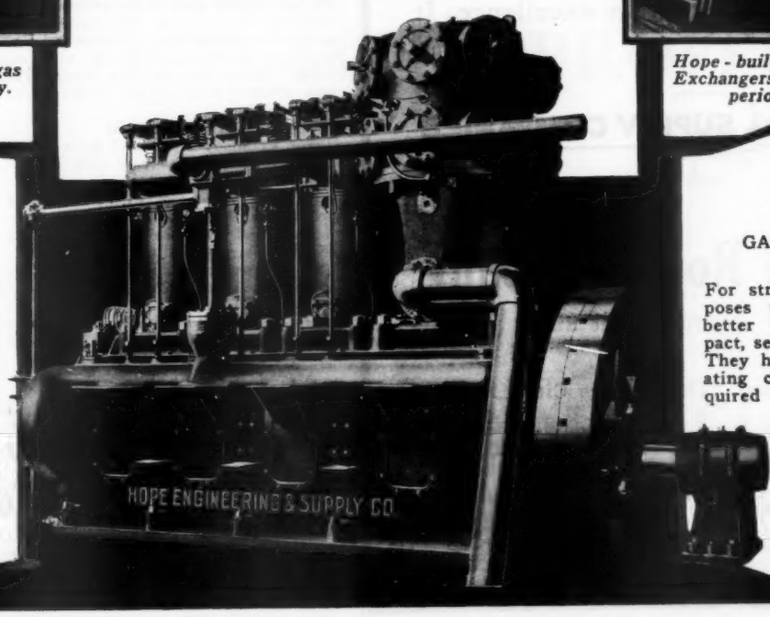
Laying 101 miles of 12-inch gas line through difficult country.

Pump House in a Hope-designed and Hope-built gasoline plant.



Hope-built Hildebrand Heat Exchangers are admittedly superior in economy.

HOPE Engineering & Supply COMPANY
MT. VERNON, OHIO, U. S. A.



HOPE
Vertical
GAS ENGINE-COMPRESSORS

These modern units combine with an efficiency and economy unsurpassed, a compactness which means a big saving in plant space, foundation and building cost, piping, transportation, installation. As an investment, you cannot put your money into a better pumping unit than the Hope Vertical.

HOPE
Vertical
GAS ENGINES

For straight power purposes there is nothing better than these compact, self-contained units. They have all the operating characteristics required in any prime mover, with an economy that is nowhere bettered and a stand-up-ability that keeps upkeep costs down.

H-4

Columbian Is the Answer

What are the characteristics necessary in a Drilling Cable?

First—It must be tough to withstand the abrasion against the sides of the casing and the internal chafing of the fibres against one another.

Second—It must be strong to support the tremendous weights and resist the jerks incident to drilling.

Third—It must be springy and water-repellant.

Columbian Manila Cable incorporates all these characteristics and it has one more which assures the user of its excellence. It is Columbian.

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NESCO

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342-70 Genesee Street

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Branches:— New York Chicago Boston New Orleans

"Drill With Manila"

By Invitation Member
Emblem of BUSINESS CHARACTER
Rice Leaders of the World Association
Empowers High Standing in HOME—PRODUCT—POLICY

Year—	Field (billions of cubic feet)	Carbon black (billions of cubic feet)	Other industrial (billions of cubic feet)	Total industrial (billions of cubic feet)	Pct. of total consumption	Average value at points of consumption per M cu.ft. (cents)
1923	*1,007	876	87	3,224	*277	28	*51.4
1924	1,143	1,016	89	3,443	285	25	54.0

*Revised figures.

Industrial consumption

(Continued) Year—	Field (billions of cubic feet)	Carbon black (billions of cubic feet)	Other industrial (billions of cubic feet)	Total industrial (billions of cubic feet)	Pct. of total consumption	Average value at points of consumption per M cu.ft. (cents)
1914	*	*	*	389	66	9.6
1915	*	*	*	413	65	9.7
1916	*	*	*	518	69	10.2
1917	*	*	*	537	68	11.7
1918	*	*	*	450	62	15.2
1919	170	50	270	490	66	14.8
1920	202	41	269	512	64	17.0
1921	182	51	181	414	62	15.5
1922	198	54	256	508	67	18.6
1923	343	109	278	730	72	13.4
1924	393	157	306	856	75	11.6

*Figures not available.

NATURAL GAS PRODUCTION IN THE UNITED STATES AND DELIVERED TO CONSUMERS, 1914-1924, IN MILLIONS OF CUBIC FEET

Year—	Ark.	Calif.	Ill.	Ind.	Kans.	Ky.	La.	Mont.	N. Y.	Ohio
1914	*963	17,829	3,548	2,580	22,628	1,422	‡26,775	.....	8,936	68,270
1915	‡992	21,891	2,690	2,261	27,046	1,667	25,540	6	7,977	79,510
1916	2,388	31,643	3,534	1,715	31,716	2,107	32,081	213	8,036	69,888
1917	5,610	49,427	4,439	1,712	24,439	2,802	31,287	334	8,372	68,917
1918	5,295	39,719	4,473	1,667	27,825	3,022	36,094	177	8,461	61,261
1919	5,587	55,607	3,825	1,407	16,150	2,057	47,062	858	8,124	63,153
1920	9,027	66,041	3,013	1,779	21,158	3,345	58,274	818	8,419	58,938
1921	4,260	75,942	2,646	1,066	15,717	4,820	58,004	336	6,583	47,412
1922	9,700	84,580	3,383	947	20,289	5,872	70,267	486	6,947	51,481
1923	24,215	131,434	4,049	880	§30,913	11,953	112,031	1,470	6,497	53,812
1924	36,616	189,692	4,072	998	25,580	12,875	160,945	1,071	6,196	47,396

(Continued) Year—	Okla.	Pa.	Texas	W. Va.	Wyo.	Others	Total	Value at points of consumption. Total (thousands of dollars)	Value at points of consumption. Average per M cubic feet (cents)
1914	78,167	110,745	13,434	236,489	*	82	591,867	94,116	15.9
1915	87,517	113,692	13,324	244,004	x342	120	628,579	101,312	16.1
1916	123,517	130,484	16,810	299,319	x575	150	753,170	120,227	16.0
1917	137,384	153,397	17,047	308,617	x1,223	103	795,110	142,089	17.9
1918	124,317	126,813	13,440	265,161	4,339	1,937	721,001	153,554	21.3
1919	163,649	113,489	24,710	234,095	6,014	129	745,916	160,888	21.6
1920	154,467	125,787	37,063	239,719	10,312	50	798,210	196,194	24.6
1921	124,058	86,144	44,504	174,921	15,608	31	662,052	174,617	26.4
1922	140,631	101,276	47,945	195,288	23,427	27	762,546	221,535	29.1
1923	203,082	112,562	74,535	203,867	35,523	153	$1,006,976	$240,001	23.8
1924	214,462	105,863	107,247	182,285	46,036	197	1,141,521	263,856	22.2

*Colorado and Wyoming included with Arkansas.
†Alabama included with Louisiana.
‡Includes gas piped from Oklahoma and consumed in Arkansas.
§Revised figures.
xIncludes Colorado.

CORE DRILLING USED AS GUIDE IN MAKING GEOLOGICAL RECORD

By H. J. C. MacDonald
Engineer and Geologist, Casper, Wyo.

Core drilling is typically exploratory and the exploratory branches of an industry do not stabilize themselves into efficiency as quickly as do the productive branches.

This accounts for, but hardly excuses, a great deal of ill-advised exploration in the oil industry.

With increasing consumption and diminishing reserves it is reasonable to assume, in the future, a more intensive search for new fields and that, lashed by severe competition, the efficiency of oil exploration will increase.

In the past, cable tool and rotary outfits have drilled most of the wildcat holes. Crushing into a pulp the texture and physical characteristics of sands and formations, destroying evidence of dips, faults, unconformities, and fossils—the very evidence most helpful to intelligent exploration.

Drilling Difficult

For example: It is well known that drilling difficulties increase with the inclination of the strata and yet, year after year, cable tool wildcats showing drilling distress from this cause, and consequently off structure and useless, have been blindly persisted in.

Good practice would core such a hole at the first sign of trouble. But usually a core drill is not at hand and often the operator does not realize its critical need and, even if he does, has not a clear idea of the time and place of its use.

As soon as a structure map is drawn its curves and quirks gain a queer authenticity. It inspires too much blind faith. Contours, often marked "tentative," are assumed to be infallible drilling guides.

And a cable tool hole driven into unknown terrane has little, if any, chance to check up a structure map.

Thus many an exploratory hole has missed its mark, many a structure supposed to be tested is untested.

The mistakes the past has tripped over, judging not so much from mistakes suspected, as from mistakes known to have been made, are those of horizon, of dip, and of overlooking faults and unconformities and their involvements.

Best Tools in the Future

The future, combing the earth with fine teeth for liquid oils, will choose the best tools and ways and means to correct these mistakes.

The search will spread out from the most likely areas for oil to their margins, and then invade the highly metamorphised and inhospitable areas of mountain building. As such areas are approached and entered, more and more will the parent sands be baked and fused until, at last, they are totally destroyed as oil containers.

The exact degree of metamophism the strata has undergone will become the critical and deciding factor of when and where to stop.

To examine the heat alteration of sands and strata they must come to the surface uncrushed, in other words, core drilling will have to picket the outposts of productive exploration.

As the earth is drilled into deeper and deeper the lower regions will in many places display the effects of increasing metamorphism. And again, how deep to go can only be decided by an examination of the drill core.

Era of Deep Drilling

The era of deep drilling has already set in with its new problems, mechanical and geologic. It automatically corrects numerous past mistakes in horizon—of holes stopped short of productive sands. So the present tendency to drill a structure to the limit of the drill sometimes overlooks geological advice and sometimes encounters unexpected production.

The future will look attentively at dry holes on pronounced structures underlain by regionally productive oil sands. It will review their histories. It will examine with the greatest care wildcats that have ended in crooked holes, or have shown a tendency to crook, or holes whose logs

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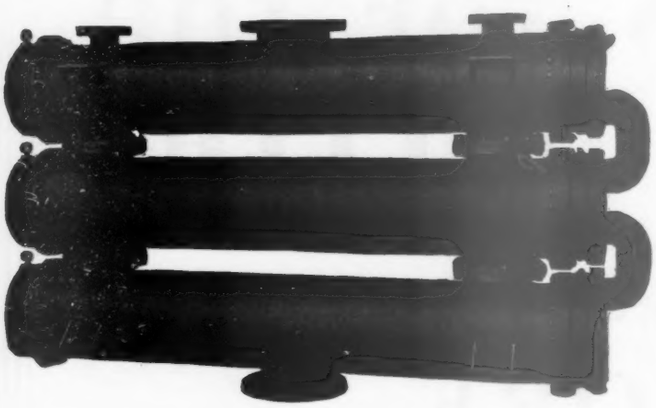

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And note, too, the many operating advantages of this arrangement. Sections can be added or removed to meet varying capacity requirements. The complete unit is readily transported and assembled if necessary to meet changing plant conditions. Inspection and cleaning are greatly facilitated.

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tell off unexpected depths to the sands, or abnormal intercepts of sands and formations. Such holes may have glanced off the flanks of a structure and into regions of steeper dips.

Cable tool wildcats have undoubtedly made blunder after blunder, particularly in regions of pronounced structures, such as the Rocky Mountain region, but cable tools are with us, and promise to remain.

So it is good practice, and one immediately effective, to core, where there is the least doubt, the sides and the bottom of a cable tool hole. A trivial expense thus prevents a misplaced hole being persisted in, or, on the other hand, may save a worthy structure from condemnation.

Coring and the Rotary

In the past, it is true, some wildcatting has been done by rotaries and a rotary can take an occasional core. And it may become through field adjustment to this special service the continuous coring drill of the future. Coring ahead of rotary holes to feel for high pressure sands is already accepted as the best practice and safety first.

But at present the rotary advances only a part time coring service. Against the diamond drill, a continuous coring machine, it is an intermittent coring machine, and a weighing of the merits and demerits of the two leads to a consideration of continuous versus intermittent coring.

It is plain that intermittent coring tends to overrun the exact place of rock fractures, faults, unconformities, and all narrow horizons or markers. The more carefully the places for coring are selected, the more skillfully cores are taken, the better the service a core, here and there, can render. But the intermittent coring drill will always have to overcome the disadvantages peculiar to its intermittency.

It is seldom possible to keep a geologist —or in fact anyone with the proper respect for the findings of a drill hole— constantly beside an exploratory hole, although the whole character of such a hole is primarily—informatory.

Drillers collect the evidence and the procedure and routine that most rigidly forces them to attend to this is always preferable.

In diamond drilling, the idiosyncrasies of drillers do not clutter up the logs as they do in cable logs. The time-honored, hairbreadth distinction between a "sand" and a "sandy shale" is irrevocably settled where a box of core can be referred to.

And the pulling of drill rods and the filing away of a 5, 10 or 20-foot length of core every so often is a rigid check on the depth of the hole and the width of formations—by length of rods rather than by a cable.

The Diamond Drill

The diamond drill has a long and useful record in mineral exploration; within the range of its adaptation it has proven itself most effective. But in entering the oil industry it has had to elbow itself into fields dominated by cable and rotary outfits, where skilled operators, runners, and helpers, are scarce, where repair parts have to be procured from a distance. Essentially a small bore, informatory machine, it has tried to stand up on its hind legs and drill large bore holes for oil production.

Yet strict confinement to its proven field gives the diamond drill a wide and increasing field of usefulness in the drilling of informatory and exploratory holes. One far, far wider than it occupies today.

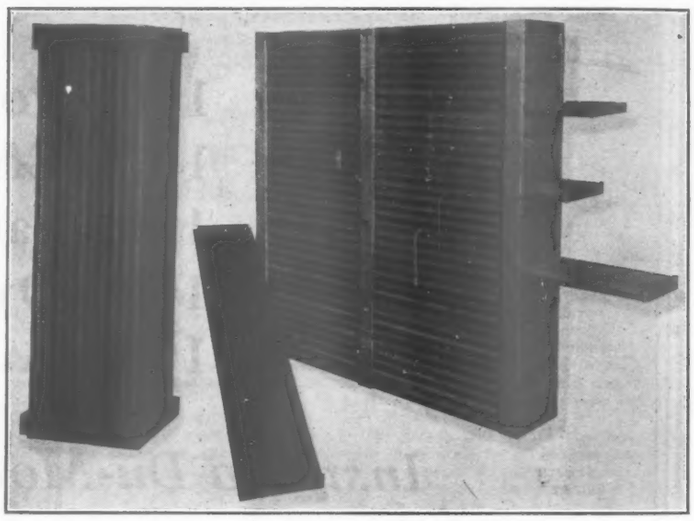
It is possible that if allowed to grow slowly and sure-footedly into the extensive field of production drilling the diamond drill may in the end adjust and strengthen itself so as to compete successfully with cable and rotary outfits.

It is more probable, however, that the super-drilling machine of the future will be a cross between the rotary and the diamond drill—a machine whose every member has been tried and tested in the harsh practice and abuse of oil field work —a machine that can take a continuous core, or not, at will; a machine having all the strength of the rotary while retaining the flexibility and sensitiveness of the diamond drill.

What Core Drilling Shows

Returning to core drilling as a corrective of past mistakes: A continuous ribbon of the formations not only traces key beds, it spreads out typical sequences of beds.

In no other way, not even by surface outcrops, usually too weathered for clear reading, is characteristic strata brought out in such clean cut relief. So the diamond drill will undoubtedly mend many past mistakes in horizon.



Box used for keeping cores.

In the selection of key beds, the lowest bed of an existing series makes the most accurate marker, and without continuous coring the lowest bed—or possible marker—is often overlooked.

The greatest service the diamond drill can render, however, is to read dips, for its core is not alone a continuous ribbon of formations, it is also a continuous protractor of their dips—and dips, on pronounced structures, not only register a hole on or off structure, they certify whether or not it is located on the most productive part of a structure's crest.

As core is rotated in the core barrel, the core arrives at the surface with the direction of dip lost. It is suggested, however, that the direction of dip can be obtained, even from a single drill hole, by placing a deflection wedge in this hole and driving a stub off the main hole, both the main hole and stub then being surveyed with acid and a compass floating in gelatine. It is best to apply this method at a horizon where a well defined key bed or marker crosses both the main hole and the stub.

Stubs driven off drill holes are not made use of to the extent they advan-

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tageously could be. Where core is lost, a stub can always take a second sample, or even a third, and so on, so that under a variety of conditions this method can be used to settle many intricate problems.

Coring Sides and Bottom

Coring the sides and bottom of doubtful wildcats will, therefore, in the future pick up their dip, and prove them to be on, or off, structure.

Faults have undoubtedly cut off and voided many old cable holes; a core's complete angular record will locate these faults and determine their effects.

In the same way overlooked unconformities will be recorded by an abrupt change in dips, or, by recovering in the core the uncrushed fossils of their land surface.

If coring an old exploratory hole finds it to be off structure, a series of structure holes must feel out the subsurface before such a structure can be intelligently retested. Of course this should have been done in the first place, for a nominal expenditure on a number of shallow holes would have settled all questions of dip and closure prior to the drilling of a deep and costly test hole. And structure drilling not only insures against a waste of money, it guarantees success if the sands underlying a structure are oil filled.

Structure drilling having found the best place for a hole to test the structure, either a cable or a rotary hole can be drilled as the first test hole. There is, however, a sound argument for making the first test hole on every structure, where the primary requirement is information, and not production, a diamond drill hole.

To core the first test hole into a deep sand, this hole's production may have to be, in part, sacrificed. For at present, deep, large-bore core holes are not easily drilled, and may not be for some time to come.

On the other hand, small-bore, deep core holes, have been successfully drilled, time and again, with a diamond drill.

An initial core of an oil sand gives an idea of its porosity and the exact width of sand oil-filled. It supplies the factors for an initial estimate and allows the operator to obtain an early idea of an oil field's productivity—placing him, at the very start, in a position to buy or sell at a profit. An advantage that may net him a large sum.

Security to Operate

Where considerable capital expenditures are involved—as in the building of extraction plants and long pipe lines, a coring of the sands that are depended upon for production gives a far greater reliability to estimate; a far greater security to the super-imposed capital.

As an aid to subsequent production, continuous coring detects all empty or porous formations into which, if the proper precautions are not taken, oil and gas can migrate and escape from the productive sands.

The use and value of the accurate information a core gives as to the size and uniformity of the sand grains, the cementation, the presence or absence of interstitial silt, as to the exact productive horizon or horizons and the character of the overlying and underlying formations, is almost unlimited in actual practice.

The operator can select the best place to shoot the sand if shooting is called for —the most secure casing seats; he knows, at all times, the "pay streaks" and the "shale breaks," and becomes master of water troubles before, not after, damage has been done by flooding.

An initial core hole in a field that will later expend several millions in production drilling would, if its core were filed so as to be readily accessible to operators and operating engineers, pay for itself many times over.

In drilling holes of this type it is to be kept in mind that information, absolute and correct, is the sole object of exploratory drilling. For instance, the water circulation of a test hole could be metered to tell when and where the hole "makes" or "loses" water and how much, and the gas the hole encounters can be metered in the same way to check the log of the oil and gas sands.* A single item of information won by being over particular may repay the price of such a hole.

In sampling a core hole, in contrast with a cable hole, sludge samples are not the sole dependence, only a continuous check on the core. While the average rock cores well, there may be times when it does not—across slips, fractures, or soft formations. The sludge samples are a constant check in such places. As such they should always be recorded and preserved.

Box drawers for the core, such as are shown in the illustration, can be crated and shipped to the hole location, filled there with the core, then shipped back to a place of permanent record in filing cabinets.

A Permanent Record

A complete core, legibly labeled, is a valuable and permanent record, full and complete evidence which, in the future, answers unexpected questions. It is a reliable record that may be, at any time, subject to a new and clearer interpretation.

Thus where core is sampled for analysis or other purposes, it should be split in half lengthwise, so that a continuous length of core always remains on file.

Prevention of useless wildcatting—the guiding of exploration expenditures into the most fertile channels—is a benefit to the whole industry and the country at large. It cannot be better accomplished than by a complete geological record that shows the relative possibilities of various districts.

The operating companies should carefully collect and preserve all their drill core, but, where they do not care to do so, the Geological Survey, as the only impartial agency at hand, should collect the core of every wildcat hole and make it a matter of permanent record.

Core drilling will, in the future, bear its greatest fruits for corporations foresighted enough to chart out a likely course and follow it consistently. A corporation strong enough to keep in the field, all the time, at least structure drill or two, of about 700 feet capacity, and a larger machine, of say around 4,000 feet or more, to make the first structure tests.

Being in essence a scientific search for information, core drilling is best in direct charge of an engineer or geologist who has the proper respect for scientific information. He can then locate his holes exactly where he desires information and cut off their expense promptly when he has obtained that information.

Core drilling is going to be in greater demand for a variety of incidental uses, as, for instance, to determine if sands will respond to, and not be damaged by, air, vacuum, or flooding; to sample, by stubs driven off old production holes, the partly exhausted sands of oil fields before mining them, and to sample beds of oil shale before erecting costly mining and extraction plants.

So, in the future, it is probable that core drilling will picket the outposts of productive exploration, that it will correct the past mistakes of cable and rotary wildcatting, and that, it will, still further in the future, sample sands for their residue of extractable oil.

And the future, if the future is to grow more efficient, will, more and more, take advantage of the exact information that can be read from a continuous core by core drilling all informatory and exploratory holes.

*"Use of Gas Meters for Determination of Pay Strata in Oil Sands," by C. V. Millikan Trans. A.I.M.E. No. 1495-G.

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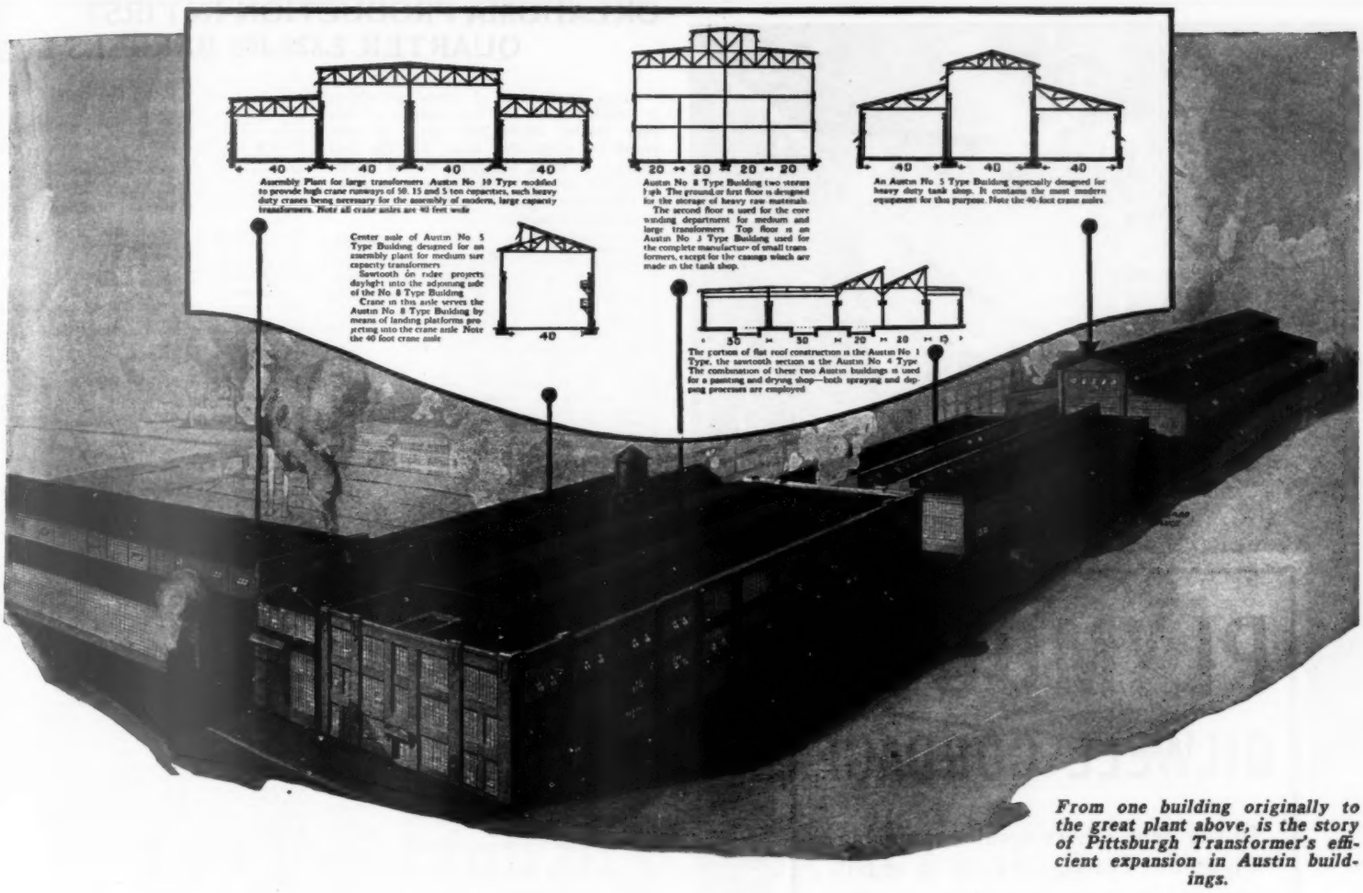
40 40 40 40
Assembly Plant for large transformers Austin No 10 Type modified to provide high crane runways of 50. 15 and 5 ton capacities, such heavy duty cranes being necessary for the assembly of modern, large capacity transformers. Note all crane aisles are 40 feet wide
20 20 20 20
Austin No 8 Type Building two stories high The ground or first floor is designed for the storage of heavy raw materials The second floor is used for the core winding department for medium and large transformers Top floor is an Austin No 3 Type Building used for the complete manufacture of small transformers, except for the castings which are made in the tank shop.
40 40 40
An Austin No 5 Type Building especially designed for heavy duty tank shop. It contains the most modern equipment for this purpose. Note the 40 foot crane aisles
Center aisle of Austin No 5 Type Building designed for an assembly plant for medium size capacity transformers
Sawtooth or ridge projects daylight into the adjoining side of the No 8 Type Building
Crane in this aisle serves the Austin No 8 Type Building by means of landing platforms projecting into the crane aisle Note the 40 foot crane aisle
40
30 30 20 20 15
The portion of flat roof construction is the Austin No 1 Type, the sawtooth section is the Austin No 4 Type The combination of these two Austin buildings is used for a painting and drying shop—both spraying and dipping processes are employed

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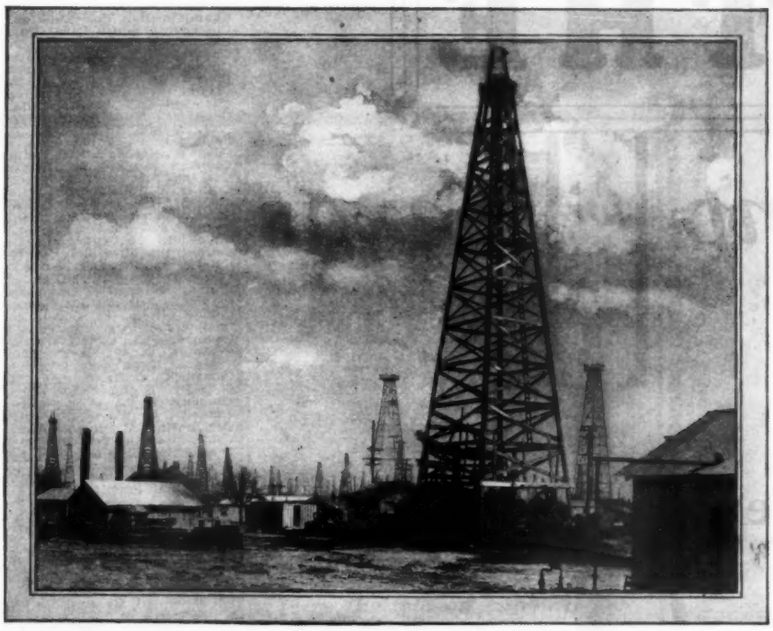
Gross production of crude petroleum in Oklahoma for the first quarter of this year totaled 39,861,255 bbls., as compared to 42,690,663 bbls., for the last quarter of 1925, according to the report compiled by the State auditor's office at Oklahoma City, for taxation purposes. That report follows:

Name and Address	Barrels
Aaronson, C. T., Tulsa	1,489
Acacia Oil & Gas Co., Pawhuska	684
Acme Dev. Co., St. Louis, Mo.	1,995
Acta Oil Co., Okmulgee	862
Ada Development Co., Ada	4,920
Adams & McGahey, Ardmore	124
Adams & Prince, Ardmore	5,872
Adamson, M. E., Tulsa	15,375
Advance Company, Inc., The, Fort Worth, Tex.	277
Aggas, John, Morris	750
Aggas, W. A., Morris	358
Ajax Drilling Co., Tulsa	207
Albion Oil Co., Tulsa	6,614
Alcorn Oil Co., Tulsa	24,450
Aldrew Oil & Gas Co., Tulsa	2,123
All-American Oil & Gas Co., Tulsa	2,703
Allen, Sam T., Sapulpa	176
Allen Weil Co., Ardmore	627
Allison, B. E., Tulsa	4,649
Almeda Oil Co., Bartlesville	3,751
Altom Oil Co., Bartlesville	190
American Contracting & Producing Co., Bartlesville	248
Amerada Pet. Corp., Tulsa	815,822
American Eagle Oil Co., Bartlesville	20,215
American Oil Dev. Co., Pittsburgh, Pa.	9,403
American Oil & Gas Co., Bartlesville	5,134
American Pipe Line Co., Wichita Falls, Tex.	12,017
American Royalty Pet. Co., Tulsa	925
American State Bank, Boynton	248
Amos, Wiemer & Grindle, Dewey	1,132
Amster, N. L., Ardmore	14,708
Ancutt, G. C. and H. S. Swift, Tulsa	86
Andes Oil & Gas Co., Tulsa	338
Anglo-Texas Oil Co., Tulsa	76,471
Anolu Pet. Corp., Blackwell	4,975
Anthony, S. W., Mounds	721
Arkansas City Ref. Co., Arkansas City, Kans.	2,841
Arkansas Fuel Oil Co., Pittsburgh, Pa.	31,253
Arthur Oil Co., Sistersville, W. Va.	8,945
Ashland Oil Co., Tulsa	6,077
Associated Oil Producers, Chicago, Ill.	3,721
Atchison Oil & Gas Co., Atchison Kans.	4,294
Athey, Earl, Ardmore	1,071
Atlantic Oil Producing Co., Dallas, Tex.	146,930
Aubyme Oil & Gas Co., Garber	3,162
Avery, Cyrus S., Tulsa	68
Avery Oil & Gas Co., Tulsa	2,043
Avery, Cyrus S., Special No. 1, Tulsa	231
Avery, Cyrus S., Special No. 2, Tulsa	135
Avery, E. D., Tulsa	335
Aymer, Charles, Nowata	606
B	
Babcock, E. A., Sklatook	124
Bagby Oil & Gas Co., Auburn, Neb.	2,775
Bailey, J. V., Cushing	4,425
Bailey, W. B., Bartlesville	356
Baker, Frank A., Tulsa	652
Baker Oil & Gas Co., The, Independence, Kans.	146
Baker & Strawn, Tulsa	14,626
Ball, Cora G., trustee, Coffeyville, Kans.	796
Baltic Operating Co., Bartlesville	6,879
Bamm Oil Co., Tulsa	145
Bander & Franklin, Tulsa	308
Bank of Commerce, Okmulgee	300
Bapp, H. E., Okmulgee	150
Barber, R. W. et al, Okmulgee	554
Barber Oil Co., Tulsa	292
Barker, Harry C., Okmulgee	7,148
Barnsdall Oil Co., Tulsa	764,945
Barr Oil & Gas Co., The, Independence, Kans.	273
Bartlesville Oil & Improvement Co., Bartlesville	74
Bartlett, D. A., trustee, Marietta, Ohio	219
Bartlett, R. H., receiver, Tulsa	1,431
Baum, Henry, Ardmore	611
Baxter, L. W., Tulsa	181
Baxter, L. W., agent, Tulsa	265
Bay State Oil & Gas Co., Kansas City, Mo.	11,678
Bay State Oil & Gas Co., Kansas City, Mo., and Paden Oil Co., Oklahoma City	4,552
Baynes, John A., executor, Mounds	194
B. B. & Waite Drilling Co., Bartlesville	68
Beacon Oil Co., Bartlesville	16,418
Beal, C. E., Tulsa	767
Beams, Drew, Okmulgee	1,337
Beard, Earl, Bartlesville	1,625
Beattie, R. L., trustee, Bartlesville	71
Beau-Ard Oil Co., Ardmore	543
Beauchamp, John L., Tulsa	115
Bebout, W. M., Bartlesville	287
Beggs Oil & Gas Co., Okmulgee	9,604
Beknell Corp., The, New York, N. Y.	425
Bellis & Good, Cushing	1,550
Ben Franks Oil Co., Enid	680
Bergen Oil & Gas Co., Tulsa	4,629
Berlin, R. L. and W. D. Kinnaman, Sedan, Kans.	481
Berlin & Duffield, Tulsa	908
Bermingham, J. A., Fort Worth, Tex.	2,900
Beny, George D., Coffeyville, Kans.	883
Berry Pet. Co., Tulsa	32,372
Bertenshaw, H. G., Nowata	1,560
Best, Edw., Nowata	303
Best, F. A. and Mary A., and J. P. Morrison, Tulsa	416
Betty G. Pet. Co., Cement	835
Betty Ruty Oil Co., Broken Arrow	80
Biddle Oil Co., Tulsa	1,849
Big Pool Oil Co., Wichita Falls, Tex.	925
Big Windy Oil Co., Tulsa	366
Billy Oil Co., Cushing	172
Bishop Oil Co., Tulsa	175
Bingman, W. B., Okmulgee	525
Bingman, W. B., trustee, Okmulgee	249
Bingham-Smith Oil Co., Okmulgee	4,878
Bingman, O. A., Okmulgee	550
Bird, Gaffney & Simons, Bradford, Pa.	1,095
Bisett, Lytle & Gray, Tulsa	4,626
B. Jack Oil Co., Sapulpa	669
Black, J. J., Phoenix, Ariz.	148
Black Gold Oil Co., Tulsa	8,752
Black, Sivalls & Bryson, Inc., Bartlesville	8,478
Black Gold Prod. Co., Tulsa	349
Blackstone Oil Co., Tulsa	2,050
Blackwell Oil & Gas Co., Blackwell	136,350
Blaise, E. F., Tulsa	57
Blakeslee, H. W., Nowata	1,664
Bloch Oil Co., Tulsa	816
Black, W. A., Montreal, Canada	328
Blum Oil Co., Nowata	64
Bokma Oil Co., Walters	515
Bole, George S., Tulsa	26,354
Boles, Neal & Perry, Cleveland	639
Bolivar Run Oil Co., Tulsa	1,135
Borealis Oil Co., Oklahoma City	82
Bovaird, W. M.-Coser, Sapulpa	1,726
Boyd, Haroid, trustee, Claremore	236
Boyle Pet. Co., Oklahoma City	482
Braden, C. E., Tulsa	191
Braden Co., The, Tulsa	2,752
Braden & Beren Oil Co., Eldorado, Kans.	272
Braden & McClure Oil Co., Eldorado, Kans.	3,295
Braden & Moore, Tulsa	12,720
Bradfield, C. H., receiver Glasco Oil Co., Tulsa	8,753
Bradford Oil Corp., Warren, Pa.	361
Bradley, E. A. and A. E. and Anna, Tulsa	1,185
Bradnorking Oil & Gas Co., Tulsa	916
Bradstreet, J. G., Muskogee	323
Bradstreet, J. G. & Co., Tulsa	524
Brady, E. H., Tulsa	874
Brady, E. H., Tulsa, Fred Swanson estate, Chanute, Kans., John Swanson, Chanute, Kans. and Dan Kelly, Marietta, Ohio	2,158
Braman Oil Co., Inc., Tulsa	2,500
Brandes Oil Co., Nowata	101
Brann, James, Bartlesville	1,975
Branson & Harmon, Nowata	926
Brazell, James, Oklahoma City	2,625
Breene, Frank M., trustee estate, Tulsa	16,525
Breene, Mabel V., Tulsa	47
Bridgman Oil Co., Nowata	282
Bridgman, Welsh & Haner, Muskogee	958
Bridwell & Heydrick, Wichita Falls, Tex.	820
Bright, Samuel, Okmulgee	615
Briscoe, J. J., Chickasha	1,625
Brittain, R. E., Oklahoma City	6,248
Britton-Johnson Oil Co., Tulsa	12,835
Brock, Charles N., Okmulgee	975
Brock, John L., Jr., Okmulgee	3,726
Brown, A. C., Oil Enterprise, St. Louis, Mo.	11,769
Brown, Charles H., Oklahoma City	34
Brown, E. A., Greencastle, Ind.	200
Brown, Guy Oil Co., Wichita Falls, Tex.	2,743
Brown, L. H., Karns City, Pa.	273
Brown, Robert D., trustee, Kansas City, Mo.	2,891
Brown, The W. E. Co., Tulsa	1,191
Brownlee, Mitchell & Kellough, Tulsa	574
Brundred Oil Corp., Oil City, Pa.	2,039
Bruner Oil Co., Independence, Kans.	226
Bruner & Abbott, Tulsa	217
Bucher, P. O., Bartlesville	330
Buckles, C. O., Tulsa	1,801
Bull Head Oil Co., Ardmore	774
Burke, Charles F., Tulsa	409
Burke-Gibbs Oil Co., Tulsa	4,601
Burke & Greis, Tulsa	351
Burke-Greis Oil Co., Tulsa	71,504
Burke-Hoffeld Oil Co., Tulsa	12,670
Burlingame, C. E., Bartlesville	1,125
Burns, C. D., Preston	2,848
Burns, Joe, Okmulgee	2,334
Burns, John R., Okmulgee	4,520
Burton Dan A. and W. Dickinson, Tulsa	164
Butler Brothers & Lively, Ardmore	1,262
Buttram, Frank, Oklahoma City	87,878
Buttram Pet. Corp., Oklahoma City	82
Bu-Vi-Bar Pet. Corp., Tulsa	4,895
Byers, C. F., Sapulpa	239
Bynum, G. T., Tulsa	923
Bynum, Maude A., Anna Braden, Irene Hildreth and Edith Parr, Tulsa	1,186
C	
Cabin Valley Mfg. Co., Chelsea	3,068
Cala Belle Oil Co., Cement	786
Caldwell, Geneva S., Chelsea	828
Callahan Oil Co., Omaha, Neb.	125
Callihan, W. F., Sapulpa	93,945
Cameron Ref. Co., Ardmore	87,979
Campbell, H. C., Nowata	1,302
Campbell, H. L., Nowata	231
Campbell, H. L., trustee, Nowata	293
Campbell, J. A., No. 2, Tulsa	68
Campbell Oil Co., Tulsa	5,317
Campbell & Byers, Cherryvale, Kans.	1,738
Campbell, Hanlin & Cobbs, Nowata	94
Canada Oil Co., Nowata	459
Canadian U. S. Oil & Ref. Corp., Bartlesville	862
Canary, E. L. and A. J., Caney, Kans.	2,096
Canary, J. D., Littleton, Colo.	3,318
Canary, S. C., Tulsa	10,498
Canary & Canary, Littleton, Colo.	2,373
Canary & Sinclair, Littleton, Colo.	71
Canfield, W. E. and G. W., Yale	950
Canterbury, S. L., Bristow	1,375
Carey Oil & Gas Co., Wellsville, N. Y.	312
Carlock, John H., trustee, Ardmore	7,775
Carlock & Dexter, Ardmore	2,909
Carner, Akin & Argue, Bartlesville	971
Carpathia Pet. Co., Tulsa	27,997



Lindley No. 1, Wortham Field, Texas. Byers Tubing. In over one year not a single shut down on account of tubing trouble.

In a Field full of Crooked Holes
Byers Tubing sets unique record

Look for the *Spiral Stripe* on Byers Pipe

Also name and year rolled in metal

THE Wortham field in Texas is considered very severe on tubing because of its many crooked holes. Under such conditions, the tough genuine wrought iron pipe shows itself to best advantage. Its metal is fibrous, rather than crystalline; hence it is like a wire cable in that it readily adjusts itself to bends without danger of fracture. Its ability to withstand constant vibration, shocks and strains has never been equalled by steel. That is why, for example, leading railroads equip cars and locomotives with Byers Pipe; and that is why Byers tubing, when put to severe test, invariably outlasts steel by many years.

Stroube and Stroube, Oil Operators, of Corsicana, Texas, have this to say about Byers tubing:

"In February, 1925, we equipped our Lindley No. 1 at Wortham with Byers genuine wrought iron tubing and have been using it every day without one moment's loss of time due to tubing trouble—indeed a remarkable record since the Wortham field is severe on tubing. We are highly pleased with the excellent service we are getting from Byers tubing at Wortham and elsewhere. We are equipping all of our wells with your tubing and gladly recommend its use to other producers."

As a means of preventing costly shutdowns and loss of production, Byers Tubing repays you manifold its slightly higher first cost.

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Established 1864 Pittsburgh, Pa.

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BYERS Tubing
GENUINE WROUGHT IRON

THE

Pump for Texas

Texas Style

NECO

When the Texas Style Neco Pump was finally completed we felt pretty sure of success because we had been widely experimenting with pumps in typical Gulf Coast service. We expected this Special Neco Pump would prove its worth but we hardly expected such rapid recognition as Texas operators have given it. Neco Texas Style Pumps are practically everywhere in service there and in many fields and by several very large companies it has, along with other Neco Pumping Equipment, been adopted exclusively.

Such wide use of Neco Pumps in Texas is traceable to the features built into them which secure exceptionally good results under the conditions. Chief among exclusive Neco features are: (1) Both valves closed at completion of down stroke—preventing gas accumulating and forming a cushion which would resist the action of rods or wire line and cause them to crowd the side of the tubing. (2) No sand or sediment remains in the barrel to cause difficulty when pumping is resumed after shut down. (3) Sanding up is prevented. (4) Cups are inverted and wear much longer.

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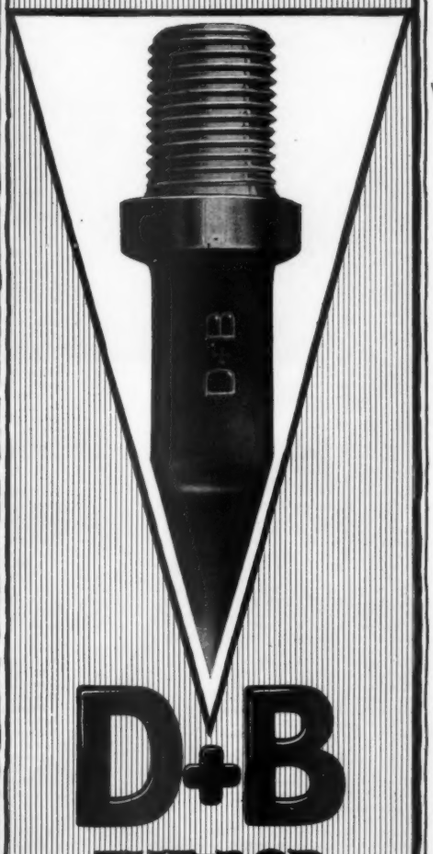
Carr, M. L., Okmulgee	5,802
Carson, W. A., Oklahoma City	2,175
Carter Oil Co., Tulsa	1,575,120
Cassidy, Alice M., administratrix, Guthrie	2,746
Cayuga Oil Co., Tulsa	711
Central Pet. Co., Tulsa	4,612
Central States Oil & Gas Co., Tulsa	1,978
Chamberlain, Cecil C., Tulsa	325
Chamberlain, H. G., Marietta, O.	249
Chamberlain, L. D., Sapulpa	451
Chambers, H. E., Tulsa	214
Champlin & Bass, Inc., Holdenville	2,499
Champlin Ref. Co., Enid	121,786
Chestnut & Smith Corp., Tulsa	3,613
Chic Osage Oil & Gas Co., Tulsa	155
Chief Drilling Co., Okmulgee	169
Choctaw Oil Prod. Co., Tulsa	761
Clarion Oil Co., Houston, Tex.	6,669
Claymo Oil & Gas Co., Clayton, Mo.	396
Cline Oil Co., Wichita Falls, Tex.	78
Clover, M. K. & L. G. Neely, Est. St. Marys, O.	5,604
Cobb, Guy P., Ardmore	1,815
Cobb & Hollingsworth, Ardmore	668
Cobleigh & Shipman, Bartlesville	406
Cochran, W. E., Tulsa	92
Coe, R. W., Ardmore	1,487
Coe, R. W., Trustee, Ardmore	13,589
Cohen, Aaron, Baltimore, Md.	1,128
Cohn, Dave, Chelsea	325
Coline Oil Co., Oklahoma City	164,978
Collins, Ida M. & Ray M., Tulsa	643
Colpitt, C. R., Bartlesville	605
Colson Oil Co., Tulsa	19,146
Colton, Marguerite, Okmulgee	2,376
Columbia Pet. Co., Oklahoma City	1,647
Comar Oil Co., St. Louis, Mo.	2,897,062
Commercial Drlg. Co., Tulsa	4,245
Commonwealth O. Co., Warren, Pa.	1,075
Compton, O. W., et al., Independence, Kans.	298
Comstock, A. C., Tulsa	325
Connelly, E. L., Tulsa	132
Connelly, E. L., et al., Tulsa	3,522
Connelly, G. W., Caney, Kans.	2,178
Constantine, C., Pawhuska	1,032
Continental Oil Co., Denver, Colo.	195,888
Continental Oil Co., Independence, Kans.	3,388
Continental Oil Co., Tulsa	10,247
Continental Supply Co., St. Louis, Mo.	2,012
Cook, Geo. W., Lawton	1,264
Cook, Maurice S., Youngstown, O.	2,886
Coombs Oil, Gas & Land Co., Bartlesville	965
Cora Exploitation Co., St. Louis, Mo.	722
Corona Oil Co., Tulsa	1,685
Coronado Oil Co., Cleveland	3,170
Correne Oil Co., Tulsa	1,259
Cory, John O., Okmulgee	2,275
Cory, M. S., Trustee for E. M. Purdy, Tulsa	1,417
Cosden, J. S., Tulsa	1,895
Cosden Oil & Gas Co., Tulsa	121,292
Cotton Belt Petroleum Co., N. T. Gilbert, receiver, Tulsa	30,425
Crawford, J. W. R. & Sons, Inc., Tulsa	386
Creekmore, C. B., Tulsa	332
Creo Oil Co., Tulsa	8,266
Crescent Oil Co., Bartlesville	609
Crews Estate Oil & Gas Production, Enid	20,827
Cremal Oil Co., Bartlesville	150
Critchlow, W. S., Ardmore	694
Crosbie, Davis, Sloan & Sturm, Tulsa	1,820
Crosbie & Gillespie Gasoline Plant, Tulsa	2,996
Crosbie, Sturm & Davis, Tulsa	2,754
Crosby Drlg. Co., Inc., Olean, N. Y.	94
Crown Petroleum Co., Houston, Tex.	22,447
Cruce & Porter, Ardmore	1,035
Cruce-Smith-Cruce, Ardmore	1,306
Crude Oil Development Corp., Blackwell	480
Crump & Beard, Duncan	49,598
Crump & Beard, S. I. Kolb, trustee, Duncan	2,846
Cudahy Oil Co., Cleveland, O.	23,821
Cumberland Petroleum Co., Cleveland, O.	25,456
Curn, W. J., Steubenville, O.	267
Curtis, W. H., Co., Elmira, N. Y.	142
Curtis, W. L., Co., F. M. Aikin, Inc., Elmira, N. Y.	1,610
Cusack, F. E., Oklahoma City	2,665
Cushing Gasoline Co., Tulsa	2,459
Custer Oil Co,, Okmulgee	921
Cutchall, I R., estate, Sapulpa	124
D	
Daisy Belle Petroleum Co., Ardmore	6,694
Dallas Co., Tulsa	4,008
Damme-Pringle Oil & Gas Co., Okmulgee	608
Damon Oil Co., Tulsa	2,060
Danciger Oil & Ref. Co., Tulsa	605
Dannenberg, N. B., et al., Chelsea	905
Darby Petroleum Corp. of New York, Tulsa	558
Darby-Lynde Co., Tulsa	957
Davis, L. R., Tulsa	1,098
Davis, R. D., Cleveland	358
Davis, W. R., Copan	299
D. C. F. S. & Co., Ardmore	1,238
Dean, John, estate, Guthrie	627
Deems, H. C., Tulsa	942
Deep Rock Oil & Ref. Co., Tulsa	156,930
Deichman, Peter, receiver, Tulsa	552
Delaware Consolidated Oil Co., Tulsa	16,732
Delaware-Cherokee Oil Co., Dewey	2,461
Delmar Oil Co., Bartlesville	131,321
Delokee Gas & Oil Co., Bartlesville	1,415
Dempsey, John J., Oklahoma City	401
Dempsey Oil Corp., Oklahoma City	1,261
Denver Prod. & Ref. Co., Okmulgee	7,463
De Soto Gasoline Co., Houston, Tex.	1,500
Detrick Oil Corp., Okmulgee	1,226
De Vinna, M. A., Tulsa	605
Devonian Oil Co., Tulsa	137,757
Dewey Portland Cement Co., Dewey	862
Diamond, Harry H., Oil Co., Holdenville	575
Dickerson, O. W., Oil Co., Oklahoma City	65
Dierks, Fred H., trustee, Kansas City, Mo.	1,842
Dixie Oil Co., Inc., Shreveport, La	150,836
Dixie Oil Co., Cement	1,695
Dixon, H. O., Bartlesville	4,170
Doak, Jas., Cushing	198
Doak Bros., Cushing	138
Dobbins, C. W., Ardmore	554
Dock Oil & Gas Co., Bartlesville	641
Dodd, Wm. A., Tulsa	883
Dolman, L. S., Walter H. Gant, S. W. Tyer, Ardmore	6,012
Dominion Oil Co., Washington, D. C.	262
Donahoe, J. J., Ponca City	1,150
Donahoe, J. L., Tulsa	1,400
Donahoe, Jabel, Ponca City	1,150
Donohue, W. J., Tulsa	92
Donahoe, Leo C. and F. S. Stryker, Ponca City	2,350
Doris Oil & Gas Co., Tulsa	850
Douglass, Harvey, attorney, Chelsea	242
Dover Oil Co., Bartlesville	664
D. & S. Oil & Gas Co., Tulsa	1,120
Ducombe, C. L., Sand Springs	787
Duffield, Lewis C., Tulsa	1,360
Duffield, L. C., & Co., Tulsa	2,748
Duffield & Howard Oil Co., Tulsa	4,277
Dunn, S. J., Tulsa	146
Dunn Oil Co., Tulsa	192
Dunnington, A. S., Tulsa	941
Durham, Earl et al. Bristow	3,590
Dwyer, J. D., Tulsa	2,902
E	
Eagle Creek Oil Co., Duncan	1,364
Eagle-Picher Lead Co., Henryetta	3,865
Earl Oil Co. (Tim Cushing, agent) Bristow	814
Eason, T. T., Enid	217
Eastern Okla. Land Co., Tulsa	92
Ebbing, L. R., & Co., Bartlesville	1,598
Echo Oil Co., Tulsa	23,230
Eliza Tim Oil Co., Sapulpa	201
Elk Oil Prod. Co., Tulsa	835
Elliott, W. C., Tulsa	258
Elliott & Smith, Tulsa	26,536
Elliott & Vensel, Tulsa	7,046
Ellis, M., Tulsa	5,584
Elm Oil Co., Tulsa	16,116
Elmer Oil Co., Elmira, N. Y.	2,395
Elo Oil Co., Tulsa	279
Emery, Lewis, Jr., & Sons, Bradford, Pa.	9,606
Emery Bros., Bradford, Pa.	2,454
Empire City Co., Tulsa	1,575
Empire Gas & Fuel Co., Del-Okla., Bartlesville	170,480
Enfisco Oil Corp., Tulsa	10,415
Enterprise Transit Co., Titusville, Pa.	879
Ethelyn Oil & Gas Co., Omaha, Neb.	2,167
Evans, Beatrice R. Gardner, Lincoln, Neb.	3,130
Exchange Oil & Gas Co., Tulsa	1,869
F	
Fagar Oil & Gas Co., Garber	52,632
Faltinson, A., Tulsa	3,310
Fan-Elva Oil & Gas Co., Tulsa	2,772
Farmer, A. L. and A. E. Duran, Tulsa	84
Farr, Arthur, trustee, Golden City, Mo.	135
Farren, C. F., Tulsa	3,130
Fay Drilling Co., Tulsa	106
Fee Oil Co., Muskogee	129
Fell, Jacob, Tulsa	338
Fern Oil & Gas Co., Yale	9,644
Fewell, Green A., Muskogee	137
Fidelity Oil Corp., Louisville, Ky.	860
Fifty-Nine Osage Oil Co., Bartlesville	35,219
Finance Oil Co., Pawhuska	17,548
Finance Oil Co. and Livingston Oil Co., Pawhuska	1,214
First National Bank, trustee, Coweta	280
First National Bank, Dewey	285
First National Bank, Haskell	294
Fisher, J. A. and R. A., Wichita Falls, Tex.	925
Fisher Oil Co., Pittsburgh, Pa.	602
Fitzgerald, D. C., trustee, Ardmore	8,818
Fitzgerald, H. L., Tulsa	49
Fitzgerald & Withington, Tulsa	1,200
Flanagan & McGrath, Nowata	161
Fleming, Martin C. and Ellen T., Tulsa	625
Flora-Okla. Oil Co., Cement	5,424
Foltz, John M., Muskogee	582
Force Oil Co., Tulsa	319
Forster, S. F., Dallas, Tex.	1,090
Fort Ring Oil & Gas Co., Fort Worth, Tex.	4,999
Fortuna Oil Co., Dallas, Tex.	146,992
45 Oil Co., Chicago, Ill.	1,714
45 Oil Co., and E. S. Bell, Chicago, Ill	5,538
Foster Oil Co., Tulsa	29,441
Foster Petroleum Corp., Bartlesville	45,281
Foster Petroleum Corp. and Chas. F. Leech, Bartlesville	338
Foster & Davis, Inc., Bartlesville	11,560
Fox, W. T., Sapulpa	3,601
Fox Petroleum Co., Ardmore	6,665
Franchot, D. W., & Co., Tulsa	30,701
French, M. C., Okmulgee	346
Francis, W. C., Skiatook	230
Franklin Oil Co., Franklin, Pa.	402
Funk, A. L., Tulsa	2,150
G	
Gaffney, H. E., estate and H. B., Bradford, Pa.	1,754
Gaffney, H. E., estate and Olive, Bradford, Pa.	940
Galbraith, H. H., et al., Independence, Kans.	1,905
Galvez Oil Corp., Tulsa	31,144
Gambill, G. W., Terre Haute, Ind.	2,218
Gant, Walter H., Ardmore	5,330
Gardner, H. N., Tulsa	555
Gardner, J. K., Okmulgee	878
Gardner Petroleum Co., Tulsa	50,341
Gardner & Avery, Tulsa	226
Garnet Oil Co., Tulsa	2,196
Garvin Drlg. Co., Duncan	1,948
Gates Oil Co., Ardmore	28,895
Gates Oil Co., Oklahoma City	328
Geneva Pearl Oil & Gas Co., Ardmore	21,148
Gates-Cook Drlg. Co., Ardmore	4,318
Genevra Oil Co., The, Bartlesville	478
Georgia Oil & Gas Co., Copan	2,969
Getty, George F., Tulsa	690
Gibson-Zahniser Oil Corp., Tulsa	3,013
Giddings, F. C., A. B. C. Dague and Chas. F. Egan, Tulsa	904
Gilbert, N. T., general agent and manager for Joseph P. Tumulty and Joseph Glass, receivers, Tulsa	1,562
Gilchrist, H. M., estate, Bartlesville	363
Gilcrease, Thos., Tulsa	4,670



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"The fillet of the Whitworth Thread minimizes pin and coupling fractures. It permits a tighter, more snug connection, with no leeway to work loose and strip."

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Gill, A. J., Okmulgee	150
Gillespie, F. A., & Sons, Tulsa	33,759
Gillette, J. M., Tulsa	1,014
Gilliland Oil Co., Tulsa	75,572
Gilmer Oil Co., The, Ardmore	32,766
Gilmer Oil Co., Lamine, Mo.	103
Gladys Belle Oil Co., Tulsa	22,439
Glass, J. Wood, Nowata	438
Glass & Harmon, Nowata	7,245
Glass, Read & McSpadden, Nowata	187
Glass & Weaver, Nowata	135
Gled Oil Co., Tulsa	12,905
Glidden, H. P., Tulsa	329
Glidden Oil Corp., Tulsa	4,718
Goddard, C. B., Ardmore	1,525
Godfrey, F. L., Enid	804
Goldie Oil & Gas Co., Kansas City, Mo.	797
Goodyear Oil Co., Tulsa	2,016
Gordon, Mary Louise, Beverly Hills, Calif.	1,519
Gorman, M., trustee, Ardmore	920
Gorton Trust, The, Cement	7,332
Graham, James H., Bartlesville	14,080
Graham Mineral Trust, Ardmore	2,381
Grand Duke Prod. Co., Fort Worth, Tex.	611
Gray Oil Co., Tulsa	4,021
Green, W. B., Oklahoma City	2,075
Greenfield Trust, Rock Island, Ill.	1,015
Greenwalt, H. L., Okmulgee	322
Gregg, C. O., Ardmore	5,427
Grieves, John B., Bartlesville	9,085
Griffin Prod. Co., The, Tulsa	2,413
Grimes, W. Baker, Tulsa	204
Grimes, Blair, et al, Tulsa	347
Grimes, Elliott & Blair, Tulsa	52
Grimes, Elliott, et al, Tulsa	163
Grimes & Gillespie, Tulsa	29,490
Guardian Oil Co., Inc., Tulsa	7,852
Gypsy Oil Co., Tulsa	2,035,174
H	
Halden Oil Co., Tulsa	615
Hales, W. T., Oklahoma City	82,597
Halfast, E. W., Muskogee	211
Hall, C. R., et al, Tulsa	1,670
Hall, E. S., receiver, Eartex Pet. Co., Tulsa	150
Hall, John M., Tulsa	183
Hall & Lucas, Tulsa	425
Halsell & Son Oil & Gas Co., Vinita	1,893
Hambro Oil Co., St. Louis, Mo.	9,512
Hamill, A. W., Tulsa	196
Hamon, Jake L., estate, Ardmore	9,685
Hamon & Colcord, Ardmore	13,657
Hancock, N. M., Shreveport, La.	193
Hancock, W. E., Tulsa	56
Haner, J. L., Muskogee	232
Haney and H. C. Ewers & Sons, Peru, Kans.	211
Haney, N. B., Ada	598
Hanks, G. C., Broken Arrow	339
Hannis Oil Co., Tulsa	214
Harland Oil Co., Wolco	24,957
Harmon, C. C., Nowata	1,392
Harmon, W. J., et al, Okmulgee	3,078
Harold Pet. Co., Blackwell	26,347
Harrington, Lillian F., No. 4, Tulsa	278
Harrington, Lillian F., No. 5, Tulsa	137
Harrington, Wm., Marietta, Ohio	167
Harrington, W. J., Coffeyville, Kans.	2,524
Harris, L. C., and M. L. Harris, Rising Sun, Ind.	405
Harris & Haun, Inc., Blackwell	1,406
Harris-Hays Co., Okmulgee	1,734
Harris-Strawn Oil Co., Ardmore	3,442
Hartley & Suggs, Eldorado Springs, Mo.	254
Hartz, Ben, Baltimore, Md.	365
Harwell, E. P., Tulsa	8,228
Haskell, F. K., Bartlesville	250
Haskell, F. K., trustee, Bartlesville	5,754
Hastings, W. T., Marietta, Ohio	372
Haubert, H. J., Tulsa	295
Hayden, Hayward, Tulsa	542
Hayden, John F., Tulsa	533
Hayes, Elizabeth R. Crockett, Oklahoma City	39,680
Haymer Pet. Co., Tulsa	779
Hayes Oil Co., The, Oil City, Pa.	444
Hazen, S. P., Tulsa	180
Hazlett, A. G., Morris	1,106
Hazlett, Bradford & Frazier Bros., Eldorado, Kans.	2,281
H. C. W. Oil Co., Chelsea	392
Healdton Oil & Gas Co., Enid	63,950
Healdton Field Oil Co., Fort Worth, Tex.	994
Heenan, J. A., Ardmore	1,487
Hefner, R. A., Ardmore	850
Heggem & Davis, Tulsa	942
Helena Oil Co., Tulsa	382
Helena Oil & Gas Co., Tulsa	10,348
Heller, M. A., Okmulgee	246
Henderson Co., The, Tulsa	428
Henderson & Holden, Eldorado, Kans.	625
Hendricks, H. G., Bristow	235
Hennessey, J. E., Okmulgee	1,287
Hennessey, J. E. and E. T., Okmulgee	35
Hennessey, J. E. and J. H. Thompson, Okmulgee	86
Henry, J. W., Tulsa	5,637
Henry Oil Co., The, Tulsa	10,216
Henry & Avers, Inc., Tulsa	1,092
Henryetta Oil & Gas Co., Henryetta	390
Henton, E. L., et al, Chelsea	1,457
Henton & Weible, Chelsea	460
Herbert Oil Co., Fort Worth, Tex.	5,330
Hertzel, F. E., Warren, Pa.	1,587
Hewitt Mineral Trust, Ardmore	1,028
Hibbard, S. B., S. S. Glasscock and John R. Hammond, trustees, Kansas City, Mo.	872
Hickernell, G. W., Taft, Calif.	543
Higgins, J. R., Tulsa	229
Higgins, J. R., receiver, Tulsa	407
Highway Oil Ref. Corp., Tulsa	2,850
Higrade Pet. & Gas Co. and Knupp Oil Corp., Warren, Pa.	618
Hillside Oil Co., Tulsa	3,875
Hilltop Oil Trust, Ardmore	3,305
Hilt, John, Frank, Ben and L. E. Dornon, Tulsa	800
Hinerman & Marshall, Tulsa	3,595
Hinkle, Fitzgerald & Westheimer, Ardmore	4,306
Hippodrome Oil Co., Tulsa	518
Hivick, L. C. and J. F., Ardmore	375
Hoefer, C. C., Kansas City, Mo.	30
Hoffer Oil Corp., Fort Worth, Tex.	16,051
Hoge, J. B., Nowata	355
Hollis, Elsie B., Los Angeles, Calif.	122
Holm, Coombs & Chapman, Bartlesville	496
Holmes Oil Co., Tulsa	6,036
Homaokla Oil Co., Oklahoma City	66,789
Home Gas Co. of Cushing, Cushing	12,936
Hope Petroleum Corp., Tulsa	1,424
Hornecker, Henry, Tulsa	713
Hornecker & Graham, Tulsa	333
Hornecker & Hagler, Tulsa	1,906
Hornecker, Miller & Dunigan, Tulsa	246
Horner, W. H., Cleveland	396
Horton, F. J., Iola, Kans.	233
Houston, Alice M., Okmulgee	75
Houston, L. N., Okmulgee	225
Houston Oil Co. of Texas, Houston, Tex.	65,560
Howard Pet. Corp., Tulsa	600
Howard, O. R., Tulsa	26,515
Howard, Duffield & Berlin, Tulsa	5,615
Howard Bean Drlg. Corp., Amarillo, Tex.	2,917
Huddleston, C. T., Okemah	1,010
Hudson, Grimes et al, Tulsa	484
Hughes, Roland A., estate, Helena L. Hughes, executrix, Cygnet, O.	423
Hughes, Roland A., estate, and Carl H. Schwyn, Cygnet, Ohio	477
Hughes, Solether & Brecht, Cygnet, Ohio	352
Hughes-Stone Co., The, Tulsa	2,369
Hulen, H. E., Bartlesville	832
Hulings, F. M., and D. M. Smith, Okmulgee	397
Hulings, F. W., Harlingen, Tex.	438
Hulings, F. W., trustee, Harlingen, Tex.	151
Hulings, M. C., Tulsa	161
Hull, J. A., Tulsa	192
Hull, J. A. Co., Tulsa	25,238
Humble Oil & Ref. Co., Houston	306,635
Hummel, Chas. S., Chelsea	53
Humphreys, L. L., Duncan	875
Hunt & Grastorf, Colorado Springs, Colo.	1,135
Hurdle, H. J., Mounds	165
Hurford, G. H., Tulsa	303
Hudson Oil Co., Wellsville, N. Y.	222
Hutchinson, E. A., Oil Co., Muskogee	572
Hutt, Annie M., Fort Worth, Tex.	114
Hutt, E. F., Kansas City, Mo.	114
Hutt, J. E., Kansas City, Mo.	114
I	
Ideal Royalty Co., Tulsa	1,312
Illata Oil Co., Vinita	63
Illinois Oil Co., Chicago, Ill.	725
Illinois-Oklahoma Pet. Corp., Duncan	3,222
Imo Oil & Gas Co., Covington	22,435
Independence Oil Co., Independence, Kans.	1,304
Independent Oil & Gas Co., Tulsa	411,199
Indianoma Corp., The, Okmulgee	5,074
Indian Territory Illuminating Co., Bartlesville	126,918
Indiana Oil & Gas Co., Tulsa	33,242
Industrial Oil & Gas Co., Tulsa	10,066
Inola Oil Co., Tulsa	2,281
International Supply Co., Tulsa	856
Interocean Oil Co., Tulsa	69,863
Interstate Oil & Gas Co., Bartlesville	3,395
Invader Oil Corp., Muskogee	3,517
Iowa Oil & Ref. Co., Hawarden, Iowa	2,190
Irelan, O. M., Sapulpa	14,915
Iron Mountain Oil Co., The, Tulsa	79,999
Irvine, James, Sapulpa	166
Irwin, John S., Bartlesville	559
Irwin-Miller, Bartlesville	794
I. X. L. Drlg. Co., Tulsa	128
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Jackbon, L. B., Sapulpa	598
Jackson, S. G., Kaw City	1,145
Jackson, Wise & Markham, Sapulpa	3,985
Jackson, Wise & Snedden, Sapulpa	1,665
Jackson, Wise & Bovaird, Sapulpa	2,242
Jacoba, Leo, St. Louis, Mo.	6,324
Jane Oil Co., Oil City, Pa.	2,765
Jankowsky, Mose, Tulsa	1,687
Jeanette Oil Co., Chelsea	1,269
Jeff Oil Co., Chelsea	358
Jeffrey, E. B., trustee, Oklahoma City	1,554
Jennie Oil Co., Chelsea	226
Jennings, E. H. Bros. Co., Pittsburgh, Pa.	2,663
Jennings, R. G., Pittsburgh, Pa.	9,428
Jenningş, R. G., Snowden & McSweeney Co., New York, N. Y.	1,491
Jenson, H. A., Tulsa	394
Jenson, P. W., Chelsea	261
Jewel Oil & Gas Co. (by P. J. Long), Tulsa	71
Jim Glenn Oil Co., Tulsa	3,888
Johneda Oil Co., Tulsa	15,145
Johnson, Mrs. C. L., Kansas City, Mo.	90
Johnson, T. E., Emporia, Kans.	262
Johnson Oil & Ref. Co., Chicago, Ill.	6,329
Johnson & Kennitz Drlg. Co., Ardmore	1,066
Johnson Farm Oil Co., Warren, Pa.	958
Johnson, T. A. & Co., Okmulgee	7,738
Jolly, W. A., Okmulgee	114
Jomack Oil Co., Bristow	74,473
Jones, R. C. & Co., Inc., Cushing	274
Jordan, F. G., Preston	364
Josey Oil Co., Tulsa	274,178
Judson Oil Co. (N. T. Gilbert, receiver), Tulsa	1,348
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Kano Oil Co., Nowata	187
Karcher & Henry, Tulsa	374
Katy Oil & Gas Co., Bartlesville	1,082
Katz, B. S., Sapulpa	1,575
Kay & Kiowa Oil Co., Tulsa	31,710
Keener Oil & Gas Co., The, Tulsa	48,341
Keeter, J. A., Tampa, Fla.	358
Keith, J. H., Coffeyville, Kans.	521
Kell, Frank, G. G. Kemp and Edward Schlaffke, Electra, Tex.	900
Kelly, Thomas C., Sapulpa	750
Kerull Oil Co., Tulsa	6,554
Kewanee Oil & Gas Co., Titusville, Pa.	122,647
Keystone Oil & Gas Co., Independence, Kans.	131
King, Frank, Tulsa	201
King, F., et al, Okmulgee	917
King, John, receiver, Tulsa	3,225
King, John, receiver, Tulsa	22,909
King Brothers, Tulsa	1,470
King & Harrington, Tulsa	198
Kingsbury, C. W., Tulsa	403
Kingsbury, C. W. and George Kinney, Sand Springs	105
Kingsbury, C. W., George Kinney, E. M. Monsell and C. F. Tingley, Sand Springs	1,590
Kingwood Oil Co., Okmulgee	86,341
Kinney, George, trustee, Tulsa	443
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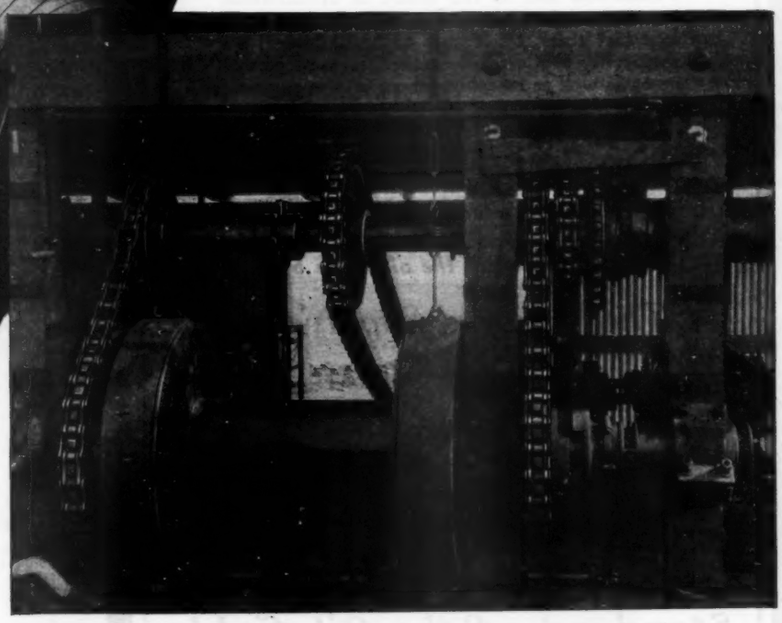

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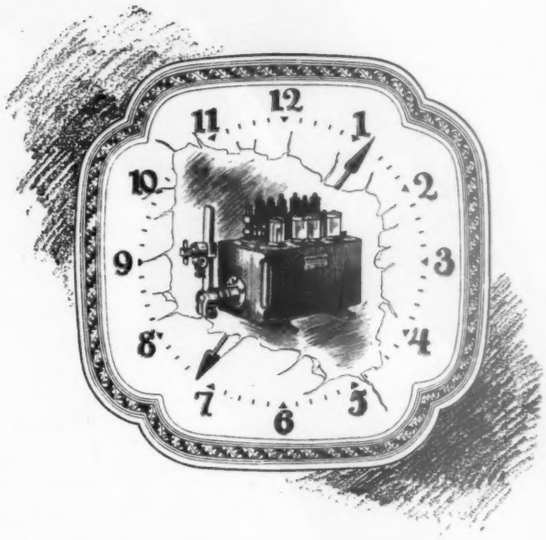

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Kistler Pet. Co., Tulsa 10,384
Kline & Brann, Inc., Tulsa 3,163
Knappenberger, D. L., Sapulpa .. 175
Knickerbocker Oil Co., Tulsa 2,425
Knox Pet. Co., Ardmore 10,116
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Large Oil Co., Bartlesville 4,012
Larkin, J. J., Tulsa 546
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Little Ed Oil Co., The, Tulsa 2,173
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Long, J. C., Okmulgee 81
Louisiana Oil Ref. Corp., Shreveport, La. 6,121
Louvain Oil Co., Bartlesville 1,616
Love, L. H., Ardmore 2,798
Lovell, Dot L., Marietta, Ohio 1,170
Lovell, J. A., Marietta, Ohio 551
Lovett Oil Co., Nowata 1,413
Lowrie & Barnes, Robinson, Ill. .. 1,292
Lowry Oil Corp., Wichita Falls, Tex. 3,006
Lowry-Burns Corp., Wichita Falls, Tex. 554
Lucky Leaf Oil & Gas Co., Blackwell 1,463
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Ludowici-Celadon Co., Chicago, Ill. 4,752
Lutner, Thomas R., Lawton 477
Lynch, C. B. & Co., Tulsa 732
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Lyon, Burt W. and Mary J., Los Gatos, Calif. 564
Lyon-Leonard Oil Co., Los Gatos, Calif. 32
Lyons, J. and L., Tulsa 1,577
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McAllister, C. T., Sapulpa 57
McBride, W. C., St. Louis, Mo. .. 14,935
McClintock, H. H. et al, Bartlesville 1,882
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McConnell, Mrs. Grace M., Shawnee 122
McCready, C. H., Tulsa 386
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McGill, A. L., Bartlesville 1,550
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McGill, H. R. and Ruth Gilbert, Tulsa 1,277
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McKeon, P. G., Tulsa 685
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McLane Farm Oil Co., Tulsa 934
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McManus, C. T., Nowata 6,142
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MaKeever Brothers, Boston, Mass. 1,759
Malloy, Pat, Tulsa 346
Mancill, H. E., Bartlesville 1,698
Margay Oil Corp., Tulsa 32,600
Margulies, Larry J., Tulsa 560
Marietta Oil Co., The, Marietta, Ohio 1,742
Marileen Oil & Gas Co., Blackwell 1,669
Mark, Clayton, Muskogee 185
Markham, J. H., Jr., Tulsa 39,405
Marland Oil Co. of Oklahoma Ponca City 1,595,800
Marr, D. T., Tulsa 2,702
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Martin, C. G., Bristow 1,250
Martin, J. E., Tulsa 1,515
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Martin, R. B., receiver, Tulsa 643
Martin, R. B., receiver, Tulsa 214
Martin, S. A. Oil & Gas Co., Chelsea 798
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Merrick, F. W. and R. W. Coe, trustees, Ardmore 21,202
Merrick, Ward S., Ardmore 1,656
Merrick, Ward et al, Ardmore 1,351
Merryman, Roy M., Steubenville, Ohio 89
Mesaner & Clough, Bartlesville 403
Mexada Oil Co., Ardmore 3,235
Mickleson, D. D., Winfield, Kans. 406
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Mid-Continent Pet. Corp., Tulsa . 1,043,945
Middleton, H. B., Tulsa 227
Midget Oil & Gas Co., Republic, Mo. 1,198
Mid-Kansas Oil & Gas Co., Findlay, Ohio 251,934
Midland Oil Co., Bartlesville ... 106,029
Midland Securities Co., Tulsa 7,658
Miles Oil Co., Tulsa 904
Miller, George L., Marland 425
Minnehoma Oil & Gas Co., Tulsa . 76,239
Minshall, E. R., Tulsa 10,070
Minshall, E. R. & Co., Tulsa 2,965
Minshall Oil & Gas Co., Tulsa 2,213
Misener, F. D., Tulsa 13,079
Misener, Lillian J., Tulsa 1,760
Mission Oil, Gas & Ref. Co., Santa Barbara, Calif. 129
Mitchell, E. D. and C. D. Jenal, Tulsa 305
Mitchell, Mark D. & Co., Independence, Kans. 799
Mitchell & Murrow, Independence, Kans. 220
Modern Oil Co., Wellsville, N. Y. 1,208
Mohan Oil Co., Tulsa 8,800
Mohawk Pet. Co., Tulsa 2,496
Moon Gasoline Co., Tulsa 217
Moore, Clint, estate, Tulsa 17,130
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Moore, Genevieve E., Tulsa 1,760
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Monroe, J. E., Tulsa 1,574
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Moseley, W. H., Bartlesville 1,175
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Mul-Berry Oil Co., Cushing 53,351
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Murphy Oil Co. of Pa., Philadelphia, Pa. 696
Murray Bros., Cleveland 1,193
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Nadle, I., Tulsa 827
Nadle, Sophia, Tulsa 1,460
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National Oil Dev. Co., Tulsa 9,125
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National Union Oil & Gas Co., Blackwell 7,921
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New England Oil & Pipe Line Co., Boston, Mass. 73,512
New Haven Oil Co., Bartlesville.. 4,426
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Nicaragua Oil Co., Freeport, Ill.. 1,725
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Night & Day Oil Co., Lawton 322
Noble Oil & Gas Co., Tulsa 8,125
Noble, Lloyd, and A. O. Olson, Ardmore 3,552
Noble, Olson et al, Ardmore 7,190
Nolan-Jackson, Sapulpa 975
North Baltimore Oil & Gas Association, Okmulgee 22,132
Northland Gasoline Co., Tulsa 3,195
Northrup, Geo., Liberal, Kans. .. 142
Nowata Oil & Ref. Co., Tulsa 16,740
Number One Oil Co., Tulsa 3,350

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O'Brien, P. J., Tulsa 795
Obins & Weber, Bartlesville 2,190
Obins, W. G., and H. C. Weber, Bartlesville 7,544
O'Connor, Denis & Sara, Butler, Pa. 266
O'Connor, Martin, Portville, N. Y. 420
Octo Oil Co., Bartlesville 424

(Continued on Page 218)

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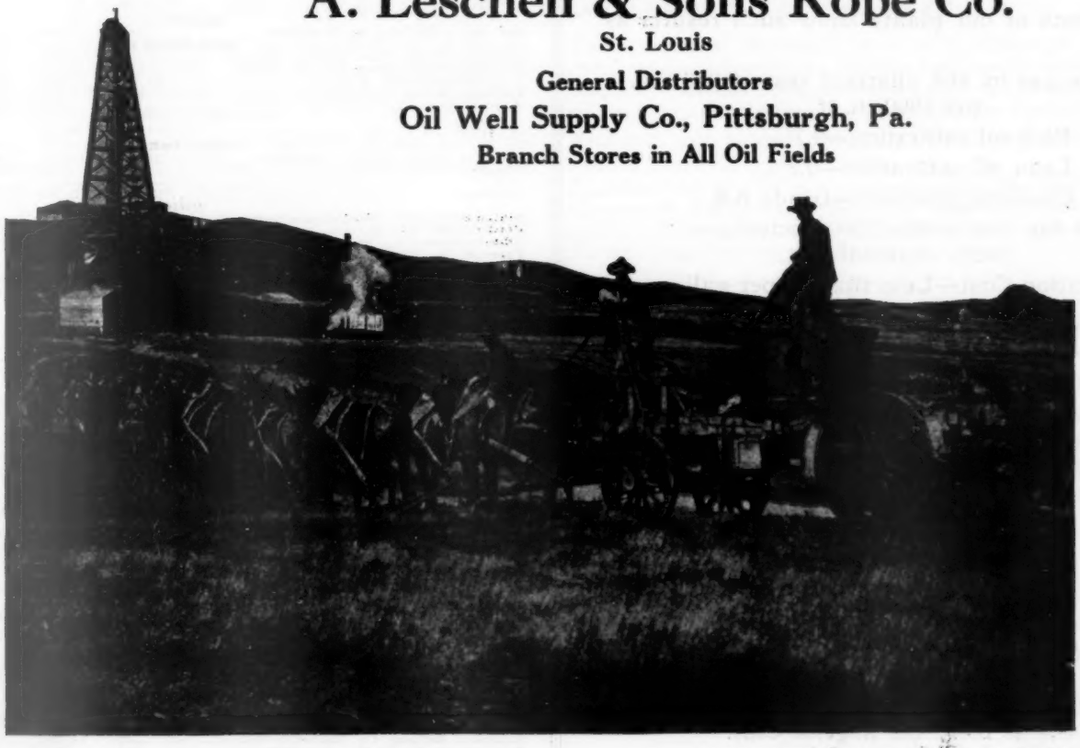

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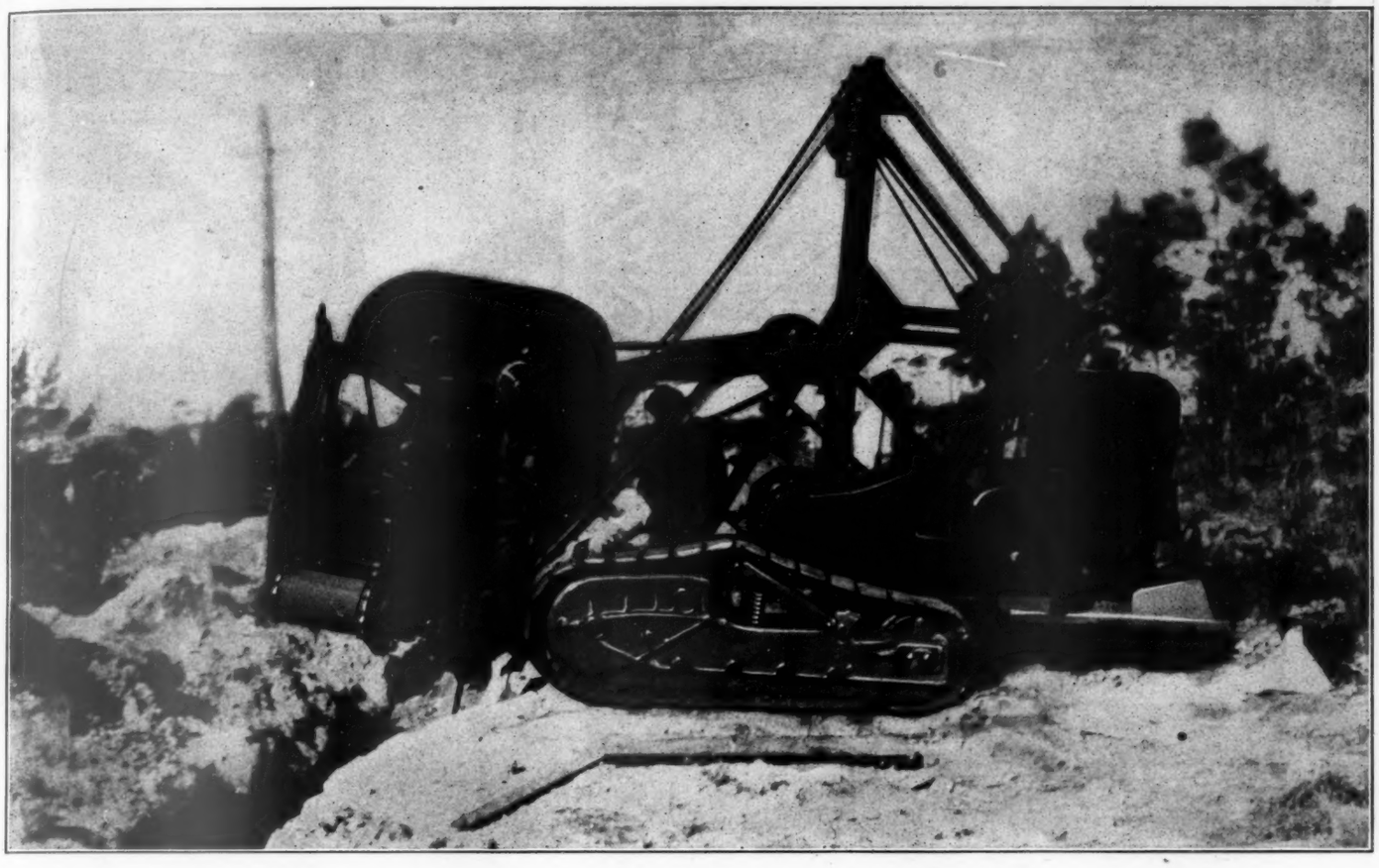
CRACKING CAPACITIES BY STATES

(Continued from Page 40)

Shell Co. of California, Martinez	33,000	8,800	Dubbs
Shell Co. of California, Wilmington	35,000	8,000	Dubbs
Standard Oil Co. of California, Richmond	100,000	1,000	Dubbs
Union Oil Co. of California, Wilmington	35,000	9,000	Cross
Total	330,000	50,600	
COLORADO			
United Oil Co., Florence	....	1,500	Burton
GEORGIA			
Atlantic Refining Co., Brunswick	4,500	600	Lewis
ILLINOIS			
Indian Refining Co., Lawrenceville	20,000	10,200	Cross-Dubbs
Lemont Refining Co., Lemont	1,500	600	Lemont
Lubrite Refining Co., East St. Louis	3,000	1,200	Fleming
Roxana Petroleum Corp., Wood River	35,000	17,400	Cross-Dubbs
Standard Oil Co. (Ind.), Wood River (estmd.)	20,000	17,500	Burton
The Texas Company, Lockport	6,000	6,000	Holmes-Manley
White Star Refining Co., Wood River	2,500	2,100	Dubbs
Total	88,000	55,000	
INDIANA			
Bartles-Maguire Oil Co., East Chicago	3,000	1,000	Jenkins
Sinclair Refining Co., East Chicago	20,000	30,000	Isom
Standard Oil Co. (Ind.), Whiting (estimated)	52,000	60,000	Burton-Holmes-Manley
Total	75,000	91,000	
KANSAS			
Arkansas City Refining Co., Arkansas City	3,000	1,400	Dubbs
Barnsdall Refineries, Inc., Wichita	5,000	2,000	Dubbs
Derby Oil Co., Wichita	5,000	2,300	Dubbs
Kanotex Refining Co., Arkansas City	9,000	2,000	Jenkins
Manhattan Oil Co., Kansas City	5,000	1,500	Manhattan
Miller Petroleum Co., Humboldt	2,000	600	Cross
National Refining Co., Coffeyville	6,000	3,000	National
Peerless Oil & Ref. Co., Chanute	3,000	1,000	Jenkins
Roxana Petroleum Corp., Arkansas City	19,500	8,000	Dubbs
Sinclair Refining Co., Coffeyville	6,000	10,000	Isom
Sinclair Refining Co., Argentine	6,500	10,000	Isom
Skelly Oil Co., El Dorado	14,000	6,800	Cross-Jenkins
Standard Oil Co. of Kansas, Neodesha	12,000	6,000	Burton
Vickers Petroleum Co., Potwin	3,500	1,500	Dubbs
White Eagle Oil & Ref. Co., Augusta	5,000	3,500	Burton
Total	109,500	59,600	
KENTUCKY			
Ashland Refining Co., Ashland	3,000	1,000	Dubbs
Great Southern Refining Co., Pryse	4,000	1,800	Dubbs
The Louisa Co. of Kentucky, Louisville	3,400	600	Fleming
Louisville Petroleum Refining Co., Louisville	1,800	2,100	Dubbs
Petroleum Refining Co., Latonia	3,000	600	Cross
Standard Oil Co. (Kentucky), Louisville	5,000	3,500	Burton
Total	20,200	9,600	
LOUISIANA			
Louisiana Petroleum Corp. (three plants), Bossier City and Gas Center	18,000	3,500	Tube & Tank
New Orleans Refining Co., Norco	10,000	3,100	Dubbs
Shreveport Producing & Ref. Co., Shreveport	5,500	4,000	Jenkins-Dubbs
Standard Oil Co. (Louisiana), Baton Rouge	70,000	30,000	Burton-Tube & Tank
Total	103,500	40,600	
MARYLAND			
Interocean Oil Co., Baltimore	7,000	2,000	Leamon-Dubbs
Prudential Oil Corp., Fairfield	10,000	3,000	Dubbs
Standard Oil Co. (New Jersey), Baltimore	32,000	17,000	Burton-Tube & Tank
Total	49,000	22,000	
MASSACHUSETTS			
Beacon Oil Co., Everett	15,000	3,000	Tube & Tank
Cities Service Refining Co., E. Braintree	8,500	2,000	Holmes-Manley
Total	23,500	5,000	
MISSOURI			
Standard Oil Co. (Ind.), Sugar Creek (estmd.)	12,000	15,000	Burton
Wilhoit Refining Co., Joplin	2,000	1,000	Jenkins
Total	14,000	16,000	
MONTANA			
Arro Oil & Ref. Co., W. Lewistown	2,500	800	Dubbs
NEW JERSEY			
Standard Oil Co. (New Jersey), Bayonne	88,000	12,000	Tube & Tank
Standard Oil Co. (New Jersey), Linden	75,000	60,000	Burton-Tube & Tank
Tide Water Oil Co., Bayonne	40,000	5,000	Burton
Vacuum Oil Co., Paulsboro	13,000	7,500	Ellis-Fleming-Cross
Warner-Quinlan Co., Warners	5,000	1,600	Dubbs
Total	221,000	86,100	
NEW YORK			
Standard Oil Co. (N. Y.), Brooklyn	24,000	8,000	Burton-Cross
Vacuum Oil Co., Olean	7,000	2,000	Ellis-Cross
Total	31,000	10,000	
OHIO			
National Ref. Co., Findlay (estimated)	1,500	1,000	National
National Ref. Co., Marietta (estimated)	500	500	National
Ohio Refining Co., Cincinnati	1,700	250	Ohio
Pure Oil Co., Heath	4,000	6,000	Cross
Solar Refining Co., Lima	12,000	10,000	Burton-Cross
Standard Oil Co. (Ohio), Cleveland (estimated)	7,500	10,000	Burton
Standard Oil Co. (Ohio), Toledo (estimated)	10,000	10,000	Burton
Stellar Refining Co., Newark	1,000	250	Leamon
Total	38,200	38,000	
OKLAHOMA			
Barnsdall Refineries, Inc., Barnsdall	5,000	4,000	Cross
Barnsdall Refineries, Inc., Okmulgee	6,000	1,200	Cross
Bolene Refining Co., Enid	5,000	2,000	Jenkins
Champlin Refining Co., Enid	16,000	4,000	Cross
Continental Oil Co., Sapulpa	7,000	3,600	Cross
Empire Refineries, Inc., Cushing	7,000	850	Doherty
Empire Refineries, Inc., Okmulgee	3,000	850	Doherty
Empire Refineries, Inc., Ponca City	6,500	2,500	Doherty
Globe Oil & Ref. Co., Blackwell	5,000	600	Cross
Imperial Refining Co., Ardmore	6,000	3,000	Dubbs
Independent Oil & Gas Co., Okmulgee	1,800	1,000	Jenkins
Johnson Oil Refining Co., Cleveland	5,000	3,000	Dubbs
Mariand Refining Co., Ponca City	25,000	15,000	Dubbs-Cross-Fleming
Mid-Continent Petroleum Corp., West Tulsa	40,000	15,000	Mid-Continent
Pierce Petroleum Corp., Sand Springs	8,000	4,000	Cross
Producers & Refineries Corp., West Tulsa	7,000	5,000	Dubbs
Pure Oil Co., Ardmore	6,500	3,000	Dubbs
Pure Oil Co., Muskogee	5,000	4,000	Cross
Shaffer Oil & Ref. Co., Cushing	10,000	4,500	Dubbs
The Texas Company, West Tulsa	10,000	10,000	Holmes-Manley
Texas Pacific Coal & Oil Co., Wynnewood	2,500	1,500	Dubbs
Tidal Refining Co., Drumright	7,000	1,200	Burton
Transcontinental Oil Co., Bristow	6,000	2,500	Slagter
Transcontinental Oil Co., Boynton	2,500	1,250	Slagter
Total	202,800	93,550	
PENNSYLVANIA			
American Oil Works, Titusville	800	200	Fleming
Atlantic Refining Co., Franklin	7,000	6,000	Lewis & Cross
Atlantic Refining Co., Philadelphia	50,000	24,000	Lewis & Cross
Atlantic Refining Co., Pittsburgh	5,000	300	Lewis
Butler County Oil Ref. Co., Butler	800	1,200	Snodgrass
Emlenton Refining Co., Emlenton	500	200	Snodgrass
Freedom Oil Works Co., Coraopolis	500	500	Dubbs
Independent Refining Co., Oil City	1,200	300	Snodgrass
Island Petroleum Co., Neville Island	1,000	200	Snodgrass
Kendall Refining Co., Bradford	1,000	1,000	Dubbs
Miller (A. D.) Sons Co., Pittsburgh	1,000	400	Miller
Mutual Refining Co., Warren	500	500	Snodgrass
Pennfoil Co., Rouseville (2 plants)	4,000	1,500	Fleming



23 Barber-Greenes—Coral Rock

Not a Single Broken Shaft

Solid coral rock cannot be shoveled. As a result, the average ditcher, with a "shoveling digging action," has a hard time with it. And broken shafts are common-places.

But, the Barber-Greene Vertical Boom, with its famous "milling action," is cutting through the hard coral rock of Miami.

And it is cutting through without high upkeep, repair, and operating charges.

The Barber-Greene Vertical Boom provides a "milling action"—that can be compared to that of a machine tool.

It cuts—it doesn't shovel. And at the last count, 23 Barber-Greenes were busy in and about Miami.

Their vertical booms are cutting through the coral rock successfully—and the Barber-Greene Automatic Release Sprockets are keeping the strains of such tough digging away from the machines.

And not one broken shaft has been reported on any of the 23.

Just ask any of the Miami users what the Barber-Greene is doing—and how the Barber-Greene is built. When you send for *Cutting Mains and Services* ask for the list of Miami users.

***Cutting Mains and Services* shows why there are 23 Barber-Greenes in Miami. And it shows how and why the Barber-Greene "milling action" cuts costs on tough digging—or any other kind.**

Send for a copy. The Barber-Greene Company, 480 W. Park Ave., Aurora, Ill.

BARBER GREENE DITCHER

VERTICAL BOOM

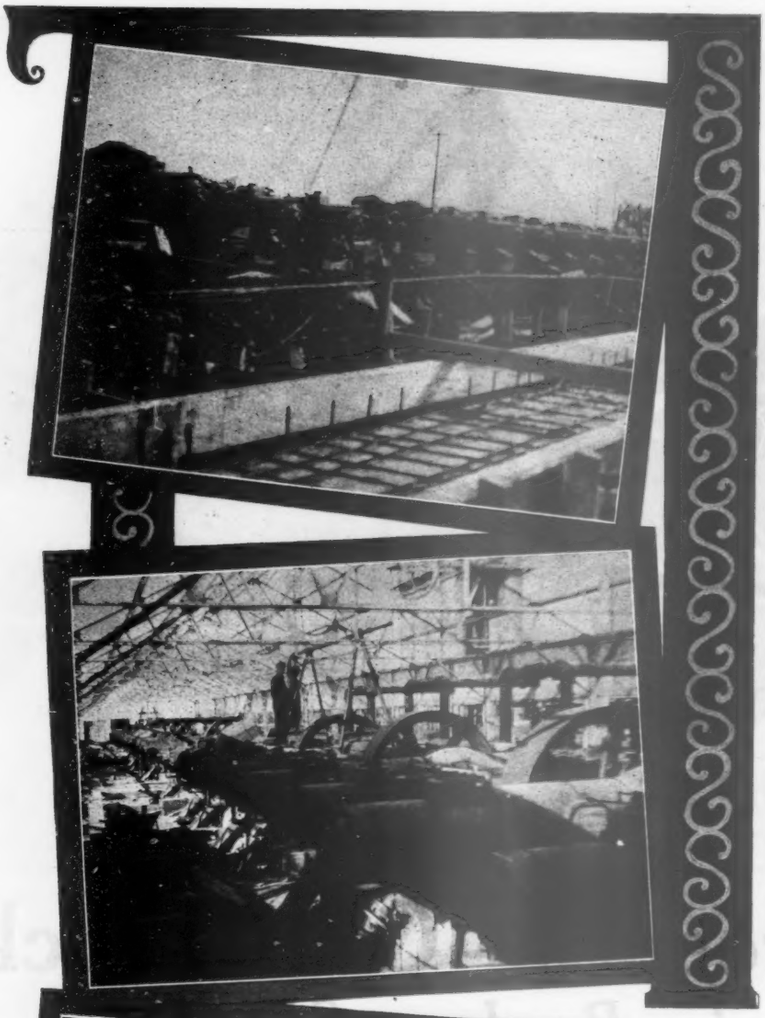
Only the Barber-Greene has the vertical boom that provides the machine tool "milling" action digging.

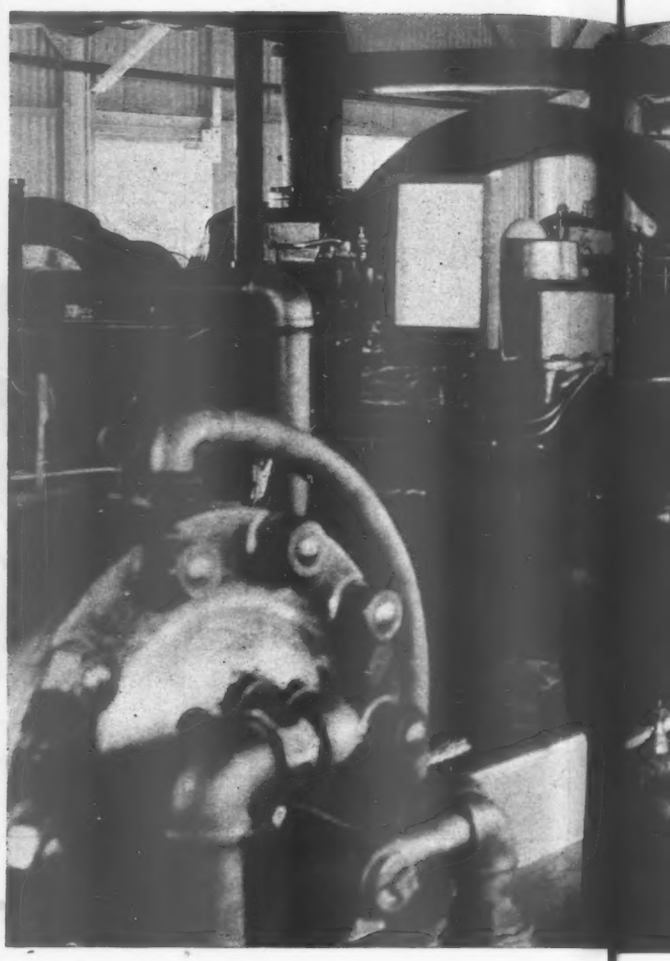
OVERLOAD RELEASE SPROCKET

Only the Barber-Greene has the patented automatic release sprocket that protects both the Barber-Greene and what it encounters underground.

BARBER-GREENE COMPANY, 600 W. Park Ave., Aurora, Ill.

Representatives in 50 Cities



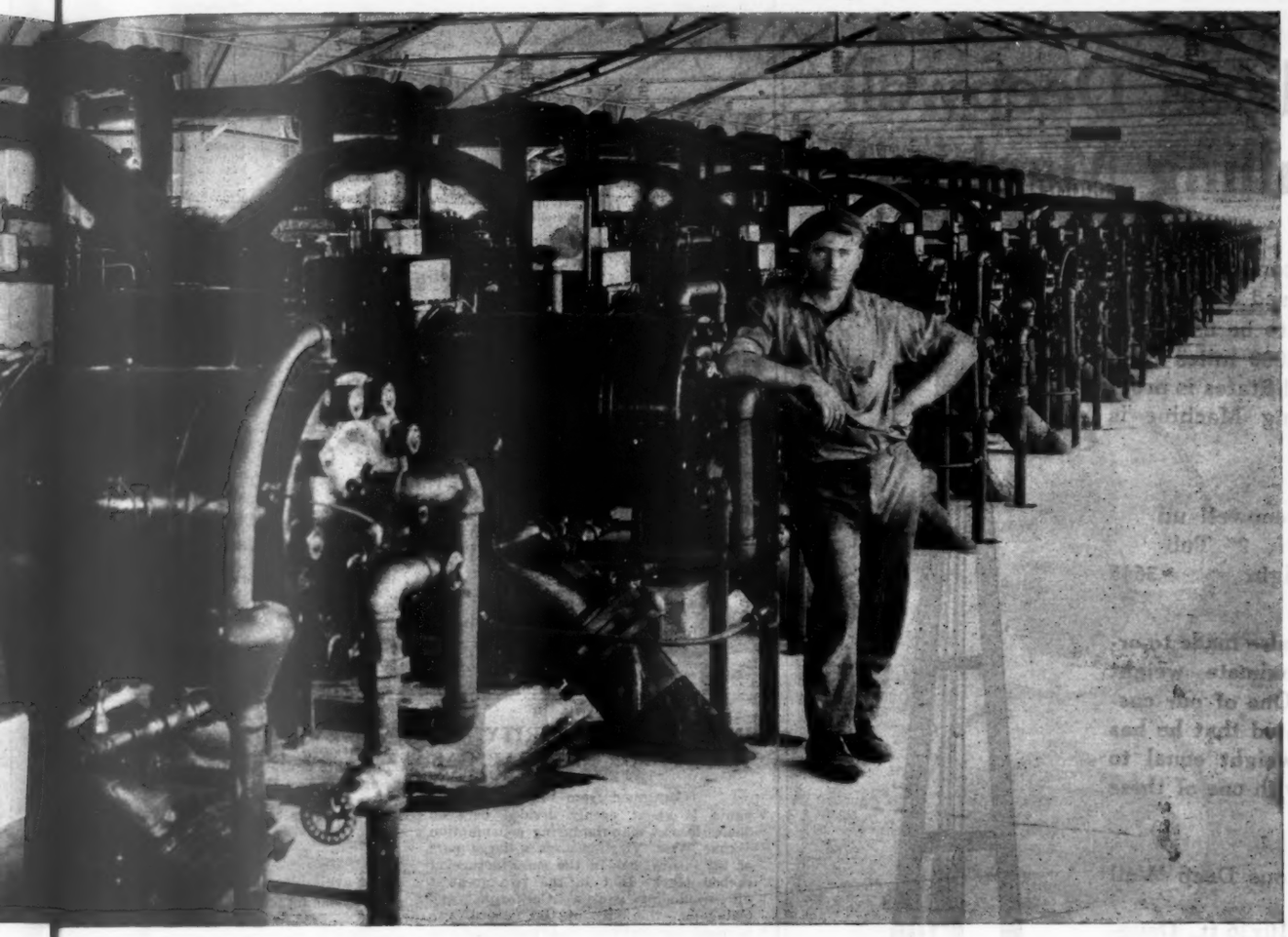


Yes, Sir, t

These three views were taken over a year ago, as the Phillips Company's Papoose plant was under construction. The Compressor installation was made under the personal supervision of Wm. (Bill) G. Cummings, of the Gas Engineering Company, Tulsa.

Clark Bros. Co. OLEAN, N.Y.

CLARK COM



...that's our Papoose

The Phillips Petroleum Company points with pride to its Papoose plant, near Wetumka, Oklahoma. And for very good reasons. The compressor equipment for this plant, consisting of 23 Clark 165 horsepower Twin Gas Compressors, is handling approximately 30 million feet of gas daily. The daily production of gasoline is between 30 thousand and 40 thousand gallons—making this plant one of the world's largest producers of natural gasoline.

This Phillips installation is only one of the many where Clark Compressors are rendering continuous, *profit-bearing* service.

SALES AND SERVICE

GAS ENGINEERING & CONST. COMPANY
125 W. First Street,
Tulsa, Okla.

SMITH-BOOTH-USHER COMPANY
228 S. Central Ave., Los Angeles
50 Fremont St., San Francisco

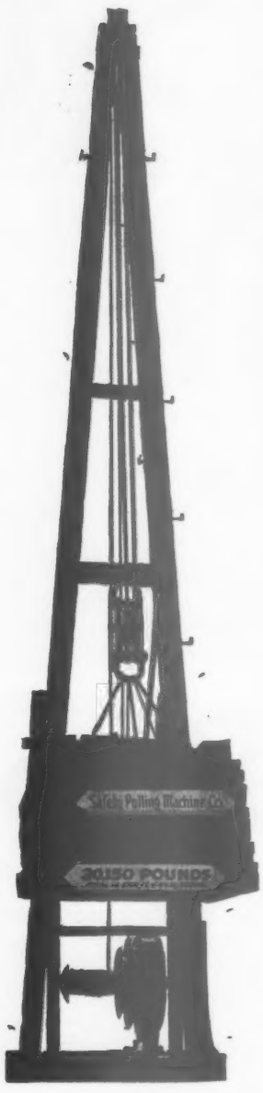
MPRESSORS

Eclipse Deepwell Pulling Machine

That one company recently purchased 6 of these machines to be used in a country 6,000 miles from the United States is proof this Pulling Machine is good.

Eclipse Deepwell up to 8000 ft. 2" Tubing Weight 3645

Wreckers also made to order, approximate weight 5000 lbs. One of our customers stated that he has pulled a weight equal to 100 tons with one of these machines.



Specifications Deep Well

Mast 8x10x36 ft., Douglass Fir A-Style Two Wheel Truck, two 16" Bronze bearing crown pulleys, 2½ Steel Pin mounted in malleable boxings. Large supporting plate 16" dia. between crown pulleys, eliminating any chance of bending pin.

Reel or Drum; 32 lb. 8¼ casing filled with concrete for winding drum, differentials banded with 3/16 band iron, brake surface 6"x40", choke brake style same as Star drilling machine.

The whole reel assembly is mounted on 2¾ square steel shaft extending clear through reel, secured by three heavy castings.

For sale by all Supply Companies

Manufactured by

SAFETY PULLING MACHINE COMPANY
INDEPENDENCE, KANSAS

Pure Oil Co., Marcus Hook	8,000	8,000	Cross
Seneca Oil Works, Warren	560	200	Snodgrass
Sinclair Refining Co., Marcus Hook	12,500	20,000	Isom
Sun Oil Co., Marcus Hook	15,000	4,600	Cross
Titusville Oil Works, Titusville	1,000	300	Fleming
Waverly Oil Works, Pittsburgh	800	1,000	Cross
Total	111,160	70,400	
RHODE ISLAND			
Standard Oil Co. (New York), E. Providence	10,000	6,700	Cross
SOUTH CAROLINA			
Standard Oil Co. (New Jersey), Charleston	10,000	13,000	Burton-Tube & Tank
TEXAS			
American Refining Co., Wichita Falls	7,000	5,500	Cross-Dubbs
Galena Signal Oil Co., Galena (estimated)	10,000	3,000	Burton
Grayburg Oil Co., San Antonio	3,500	2,400	Fleming-Dubbs
Gulf Refining Co., Port Worth	10,000	9,000	Gulf & McAfee
Gulf Refining Co., Port Arthur (estimated)	110,000	60,000	Gulf & McAfee
Humble Oil & Ref. Co., Baytown	50,000	27,100	Tube & Tank
Humble Oil & Ref. Co., Burkburnett	4,000	850	Tube & Tank
Elliott Jones & Co., San Antonio	4,000	1,500	Holmes-Manley
Kent-Middleton Oil Co., Corsicana	2,500	400	Richey
Magnolia Petroleum Co., Beaumont	50,000	22,000	Burton-Cross
Miller Petroleum Co., Wichita Falls	3,000	600	Cross
Panhandle Refining Co., Wichita Falls	4,000	1,500	Dubbs
Producers Refining Co., Gainesville	5,000	850	Doherty
Pure Oil Co., Smith's Bluff	20,000	13,000	Cross
Simms Oil Co., Dallas	4,500	3,200	Cross
Sinclair Refining Co., Houston	18,500	20,000	Isom
Southern Refining Co., Somerset	2,000	300	Fleming
Star Refining & Producing Co., Fort Worth	1,500	300	Fleming
Terminal Oil & Ref. Co., Houston	10,000	1,000	Jenkins
The Texas Company, Port Arthur	50,000	48,000	Holmes-Manley
Texhoma Oil & Ref. Co., Wichita Falls	7,000	2,000	Dubbs
Transcontinental Oil Co., Fort Worth	5,000	2,250	Slagter
White Eagle Oil & Ref. Co., Fort Worth	5,000	1,000	Holmes-Manley
Total	386,500	225,750	
UTAH			
Utah Oil Refining Co., Salt Lake City (estmd.)	4,500	4,000	Burton
WEST VIRGINIA			
Standard Oil Co. (New Jersey), Parkersburg	4,000	2,160	Burton-Tube & Tank
WYOMING			
Continental Oil Co., Glenrock	10,000	6,000	Burton
*Midwest Refining Co. and Standard Oil Co. (Ind.), Casper	50,000	24,000	Burton
*Midwest Refining Co. and Standard Oil Co. (Ind.), Greybull	14,000	15,000	Burton
*Midwest Refining Co. and Standard Oil Co. (Ind.), Laramie	4,000	4,500	Burton
Producers & Refiners Corp., Parco	10,000	5,000	Dubbs
The Texas Company, Casper	6,000	6,000	Holmes-Manley
U. S. Oil & Ref. Co., Osage	2,000	1,000	Cross
White Eagle Oil & Ref. Co., Casper	3,000	1,000	Holmes-Manley
Total	99,000	62,500	

*Cracked plants are operated by Standard Oil Co. (Indiana). Capacities given are estimates.

INDUSTRIAL SECURITY OF NATURAL GAS

(Continued from Page 82)

vania is about evenly divided between domestic and manufacturing consumption—that West Virginia uses a large part of its natural gas in the manufacture of carbon black—that in the two greatest oil producing states, California and Oklahoma, the bulk of the natural gas is used for drilling and pumping—and that in Louisiana the carbon black manufacturers use by far the largest part of the output.

Thus we see that the close proximity of natural gas fields to large masses of population and to large industrial centers is the largest factor in determining the utilization of natural gas.

Probably the greatest reason for the present discussion of "conservation" in connection with the oil industry was based on the idea that we had a current overproduction. And probably the problem that is today pressing hardest against the natural gas industry is to get enough gas. Both oil and gas are "wasting assets"—and the cost of producing each has increased sharply during recent years.

Aside from purification and the extraction of gasoline (if there is any in it) natural gas goes to the customer in the same form that it leaves the ground—hence it makes a direct appeal to its more than 3,400,000 consumers and the 17,000,000 who enjoy its light, heat and power.

Public Utility

The natural gas industry very obviously falls within the scope of "Public Service Utilities"—and one of the chief accomplishments of the industry, during recent years, has been the almost complete transformation in the attitude of the public. Natural gas is being slowly but surely and securely "placed" in the public mind. And as the ideas about the fundamentals of the natural gas industry become clearly defined in the minds of its millions of customers, just to that extent is the industrial security of natural gas assured.

GAS IN COMPETITION WITH OTHER FIELDS

(Continued from Page 86)

poor installations. We can reduce the metal loss from the usual figure of 4 per cent to 6 per cent in poor installations to less than 1½ per cent with good installations. The electric furnace can reduce this figure slightly, but not nearly enough to offset the higher cost of electric energy.

Gas Ultimate Heat

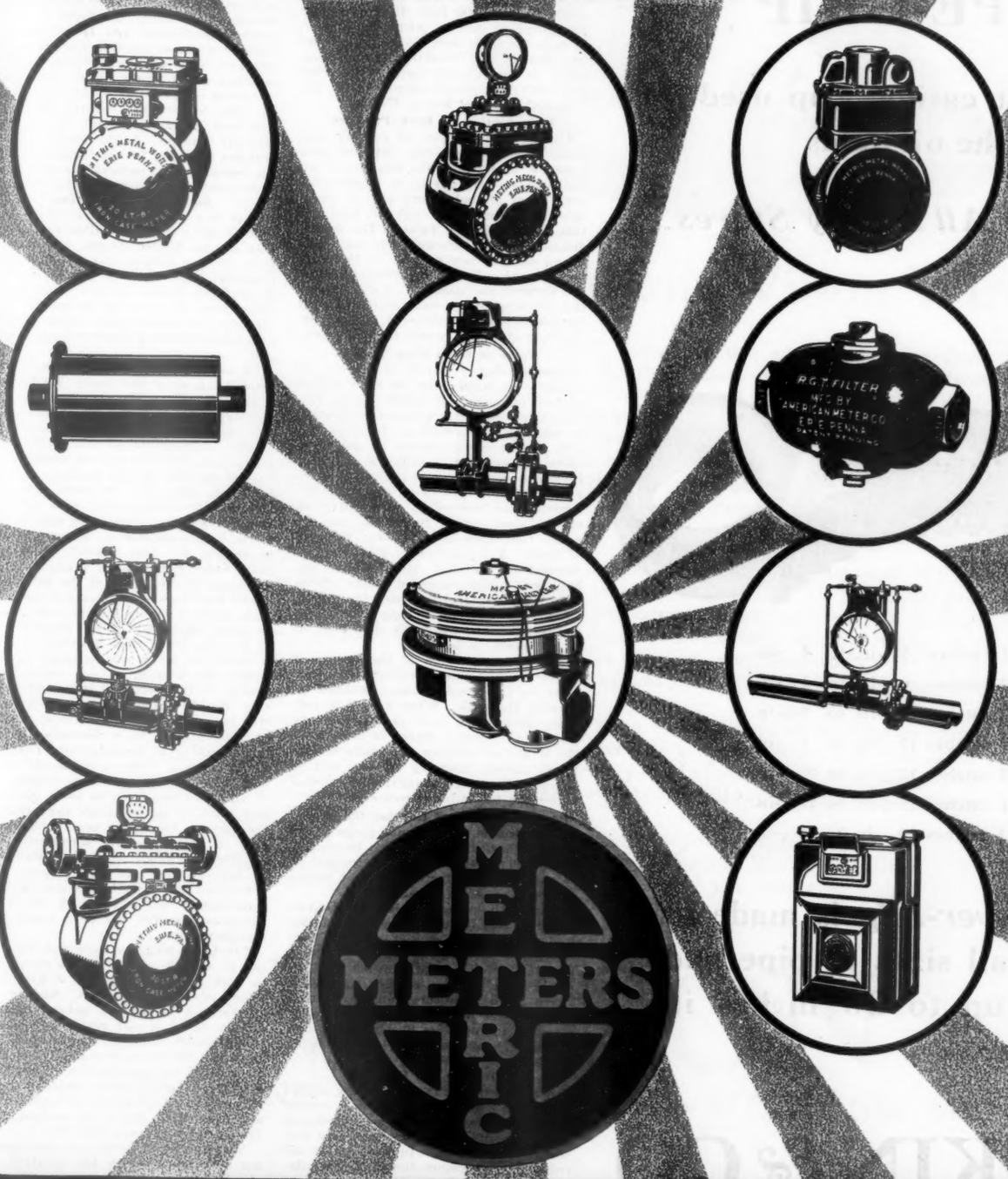
Gas must be the ultimate source of heat energy. When natural gas is no longer available, this energy must be supplied by manufactured gas. The burning of raw coal will not be tolerated in the future in any heating operation. Oil will be too valuable as a motor fuel and for other products to be utilized for heat. Electricity is too extravagant in the depletion of our coal resources to be considered. The utilization of our coal resources for the production of gas, coke, tar and a thousand other by-products must eventually be the final practice.

I can sum up what I have said in a few words. We must know our product, give as good service as we possibly can, and then sell our product and our service to our customers. We need only to know the facts and to sell the facts in order to be the dominant figures in the business of supplying heat energy.

EXECUTIVE ORDER LEASES

WASHINGTON, D. C., May 15.—Senator Cameron of Arizona made a favorable report from the Senate Committee on Indian Affairs on his bill authorizing oil and gas mining leases upon unallotted lands within executive order Indian reservations. It seems certain this measure will become law by being passed by the Senate and substituted for a similar bill now on the House calendar. The Senate bill differs in two respects but it is understood the Senate changes are satisfactory to the House committee. The House bill would recognize all of the applicants for permits to drill for oil or gas on this unallotted executive order Indian reservation land, the number being over 400. The Senate bill provides only for the recognition of as many applicants as may have expended money for certain purposes. The number of such applicants is estimated from half a dozen to perhaps two dozen. The House committee will accept this amendment. Another section has been inserted in the Senate bill that the boundaries of the executive order Indian reservations shall not be changed except by act of Congress.

LARGE VOLUME *Gas Meter the Most Complete Line Gas Measurement*



BUY A

LARKIN

NEVER-SLIP PIPE-GRIP

The surest casing grip used in the oil fields

Sold by All Supply Stores

No. 1 catches 5⅝-in. to 4 -in.
No. 2 catches 6⅝-in. to 5 -in.
No. 3 catches 8 -in. to 6⅝-in.
No. 4 catches 10 -in. to 8 -in.
No. 5 catches 12½-in. to 10 -in.
No. 6 catches 15½-in. to 12½-in.
No. 7 catches 20 -in. to 15½-in.

The *Never-Slip* is made to handle all sizes of pipe and casing up to 20 inches in diameter.

LARKIN & CO.

BUTLER, PA., U. S. A.

WHAT NATURAL GAS MEANS TO PRODUCER

(Continued from Page 80)

group of wells. These gas regulations, as many of you know, limit the operator to a production of not more than 25 per cent of the open flow capacity of the well. These rules are good inasmuch as they serve as a check to keep the operators from "pulling" too hard on the sands; but what of the required measurements of "open flow"? Assuming, that when a well is blown to atmosphere once a month, as required, the flow rate becomes constant in 15 minutes, the total time of blowing each well per year would be three hours. With a production of more than 200,000,000 feet of gas from approximately 1,650 wells, in this State, the average daily production per well is about 337,000 feet. Based upon a factor of 4, the average "open flow" per well would be 1,348,000 feet. If every operator complied strictly with the law in blowing his wells each month the annual loss would be 278,000,000 feet of gas, which at an assumed value of 20 cents per 1,000 feet, would mean a total unrecoverable annual loss of $55,600.

Rejuvenation of Rock Pressure

Considerable amounts of gas are now being used for restoring depleted rock pressure, to assist in the recovery of oil from fields where gas is no longer present. From all indications greater quantities of natural gas will be used for this purpose in the future. The use of disassociated or "cracked" gas may open up an entirely new problem in this connection and will have no small effect on the natural gas industry. Also the partial cracking of natural gas, which will provide increased volumes of gas and by-products of value, cannot be overlooked.

Valve of Open Flow Waste

Assume that a barrel of oil can be raised from within the oil sand to the surface by means of 1,500 feet of gas. This is a reasonable assumption because it has been done with as little as 650 feet. The amount wasted in the State alone by open flow measurements would furnish enough energy to recover approximately 185,333 bbls. of oil per year. Estimating the net value of a barrel of oil, in stock tanks, to be $2, the gas would then have an equivalent value of $370,666. A broad view of this situation wherein the efficient utilization of gas has been given extended study shows that there is a real necessity for conservation and that our supply of natural gas is much more valuable than most of us are prone to believe.

The intrinsic value of the gas itself or of its associated products does not make up the complete loss occasioned by blowing the wells. When a well is suddenly opened the back pressure on the sand drops, and if water is present in the structure, flooding the sands is hastened, thereby trapping off and making irrecoverable, large quantities of gas and decreasing the ultimate recovery.

Pressure Method of Gauging the Wells

The present method of gauging the wells by open flow capacities, besides being injurious and wasteful is subject to so many variable factors that the results obtained are often unreliable.

During the past two years the Bureau of Mines has been studying methods for measuring well capacities and has definitely proved that the relation between flowing the volume and total potential capacity is a function of the relation between flowing pressure and absolute shut-in sand pressure. From this relationship, the absolute flow capacity of a well may be determined without blowing the well.

Pressure and Leakage

In connection with the gauging of gas wells a system of back pressure control of high pressure wells has been developed which permits lower line pressures and eliminates regulators. In one instance the reduction in pressure due to the installation of this control system saved more than $25,000 per year in leakage from the equivalent of 100 miles of 3-inch line. This saving was solely from decreased line pressure. In addition, systematic tests for leakage on gas transmission lines have resulted in the saving of millions of feet of gas.

Residue Gas

An important factor which is resulting in the conservation and saving of large quantities of our dry natural gas reserves is the utilization of residue gas from casinghead gasoline plants. This gas is produced in connection with the production of oil and has in the past been wasted. The operators are to be commended for making use of this gas especially as they have been confronted with many troublesome problems. They have, however, met each turn and given service without interruption.

Efficient Use of Oil

Conservative estimates show that over 90 per cent of all the crude oil produced in the United States is used in some form of fuel. With increasing knowledge of combustion engineering the tendency is to utilize this fuel more efficiently by burning it in highly developed types of internal combustion and Diesel engines. Further progress in this direction will eliminate much oil now inefficiently used for firing steam boilers and for the manufacture of oil gas. One might ask "What has this to do with natural gas?" It will have a material effect on the natural gas industry. As the supply of natural gas for boiler fuel and manufactured gas becomes less, natural gas will have as its chief competitors coal and coal gas.

Supply of Oil and Gas

Coal is estimated to be about 97 per cent of the total combustible fuel available in the United States. Crude oil, shale oil, and natural gas constitute the remaining 3 per cent. Of this 3 per cent, natural gas is but a very small part. From these facts it can be readily seen that our ever-diminishing supply of natural gas is becoming more and more valuable.

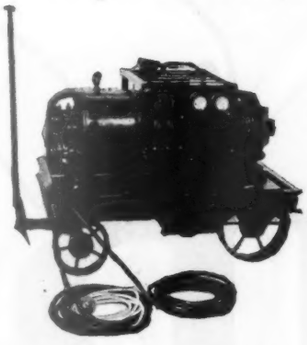
Of all the combustible fuels available none is as clean and easily handled as natural gas. It is the duty of all in the industry to prolong the use of this valuable commodity over the greatest length of time by educating all concerned in its production, handling and consumption, to employ the best known methods of conservation. There are, no doubt, many in the natural gas industry who consider themselves only interested in natural gas when it is available at burners, ready to supply the heat needed. They are prone to leave the drilling, production and operation in the hands of the field men. Those who handle the gas are the ones most affected by its supply and should be most interested in its conservation, as it is the life of their business.

There are many who consider conservation the keeping of our natural resources in their original state and place, this idea is erroneous and if it were true industrial progress would be seriously handicapped. In a discussion of the true meaning of conservation, Franklin K. Lane said, "The word should mean helpfulness, not hindrance, — helpfulness to all those who wish to use a resource and think in larger terms than that of the greatest immediate profit; hindrance only to those who are spendthrifts. A conservation which results in a stalemate as between the forces of progress and governmental inertia is criminal, while a conservation that is based on the fuller, the more essential use of a resource is statesmanship.

"To know what we have and what we can do with it—and what we should not do with it, also is a policy of wisdom, a policy of lasting progress. And in the furtherance of such a policy the first step is to know our resources—our national wealth in things and in their possibilities; the second step is to know their availability for immediate use; the third step is to guard them against waste, either through ignorance or wantonness; and the fourth step is to prolong their life by invention and discovery."

We should not spend our time pondering over waste which has occurred, but should devote our efforts in working out better ways of conserving and efficiently utilizing our rapidly decreasing supply of natural gas, one of nature's greatest gifts to man.

"My Men Always *Want* Wilson Wire"



Use Wilson Type S Machine

Simple, close regulation; a *self-exciting* generator; a commutator that always shows *less temperature rise than any other part of the machine;* a simple, compact control panel; a special resistance unit which can be supplied *for reducing the welding current to as low as 25 amperes* for light work and thin gauge metals; an arc that is easy to strike and easy to maintain — these are some of the features that make the Wilson Type S a distinct achievement in electric arc welding. Write today for complete information and prices.

"I really can't afford to use any other wire than Wilson. In the first place, my men *want* Wilson Wire. They know we can get them a grade* of Wilson Wire that's just *right* for any kind of welding they have to do. In the second place, they *know* that no matter what grade*, it will run uniform right through. The result is that when we use Wilson Wire our men have no alibis, and don't need any."

**"Grade" means the analysis of the wire.*

Every man who has had any experience with Wilson Wire will tell you the same thing. He'll tell you that he can select the correct grade (analysis) of Wilson Wire for the kind of metal he's welding — and that *every rod will be just like every other rod* in the grade selected. This means practically perfect welding jobs.

You'll find it pays to insure your welding by using Wilson Wire, because you can secure the *right* grade (analysis) for every kind of metal you weld, and, whatever the grade selected, it will run uniform throughout.

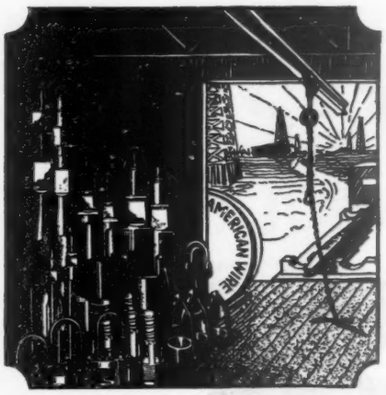
Write today for your samples of Wilson "Color-tipt" Welding Wire, indicating the kind of metal you desire to weld.

WILSON WELDER & METALS CO. INC., WILSON BLDG., HOBOKEN, N. J.

WILSON

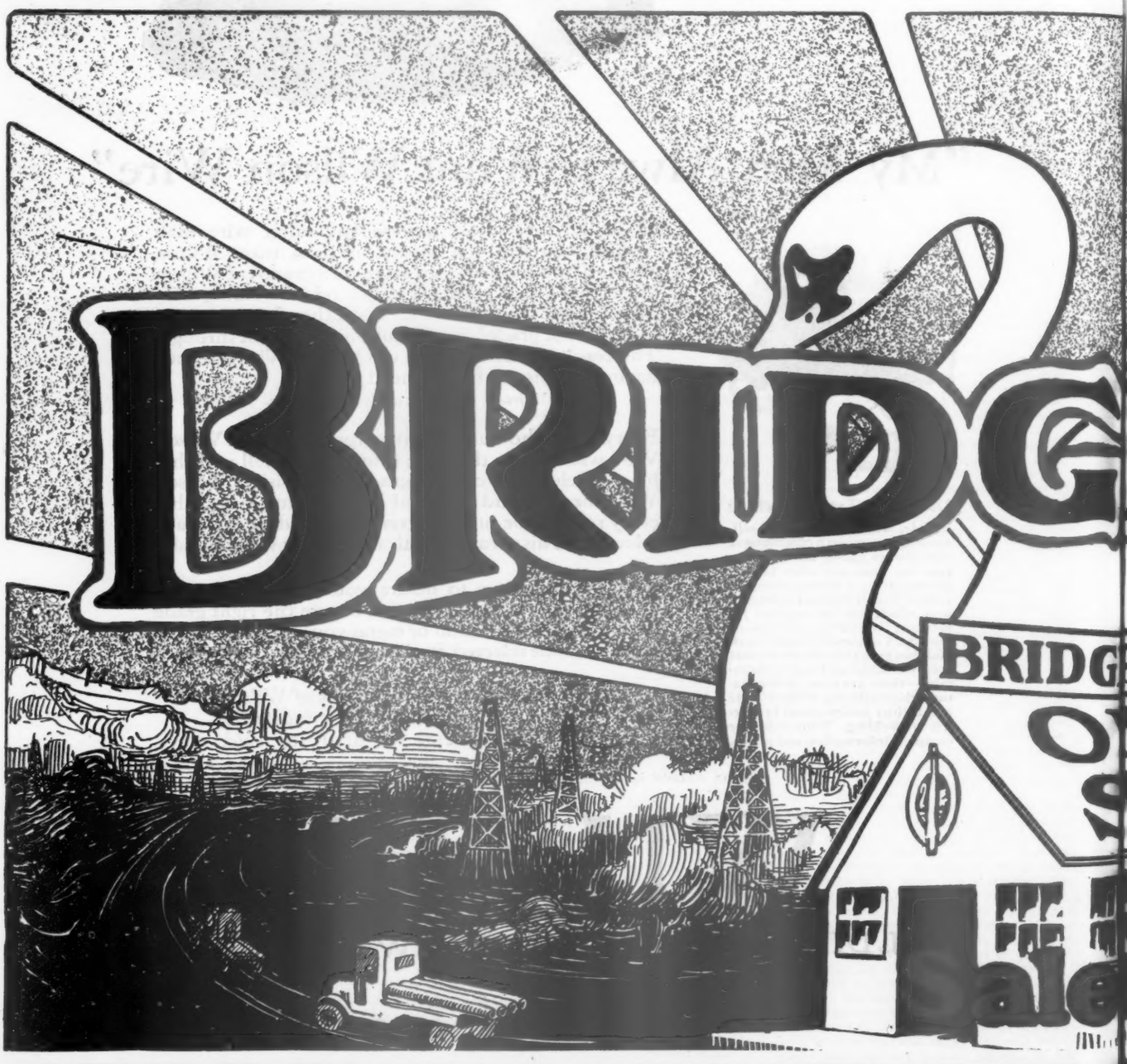
WELDING MACHINES AND WELDING WIRE

Heat Tr
BRIDGP
Field Pr



Bridgeport Tools Meet P

Strengthened for deeper depths, they are meeting the conditions in the deeper fields today as successfully as in the more shallow wells of the past.

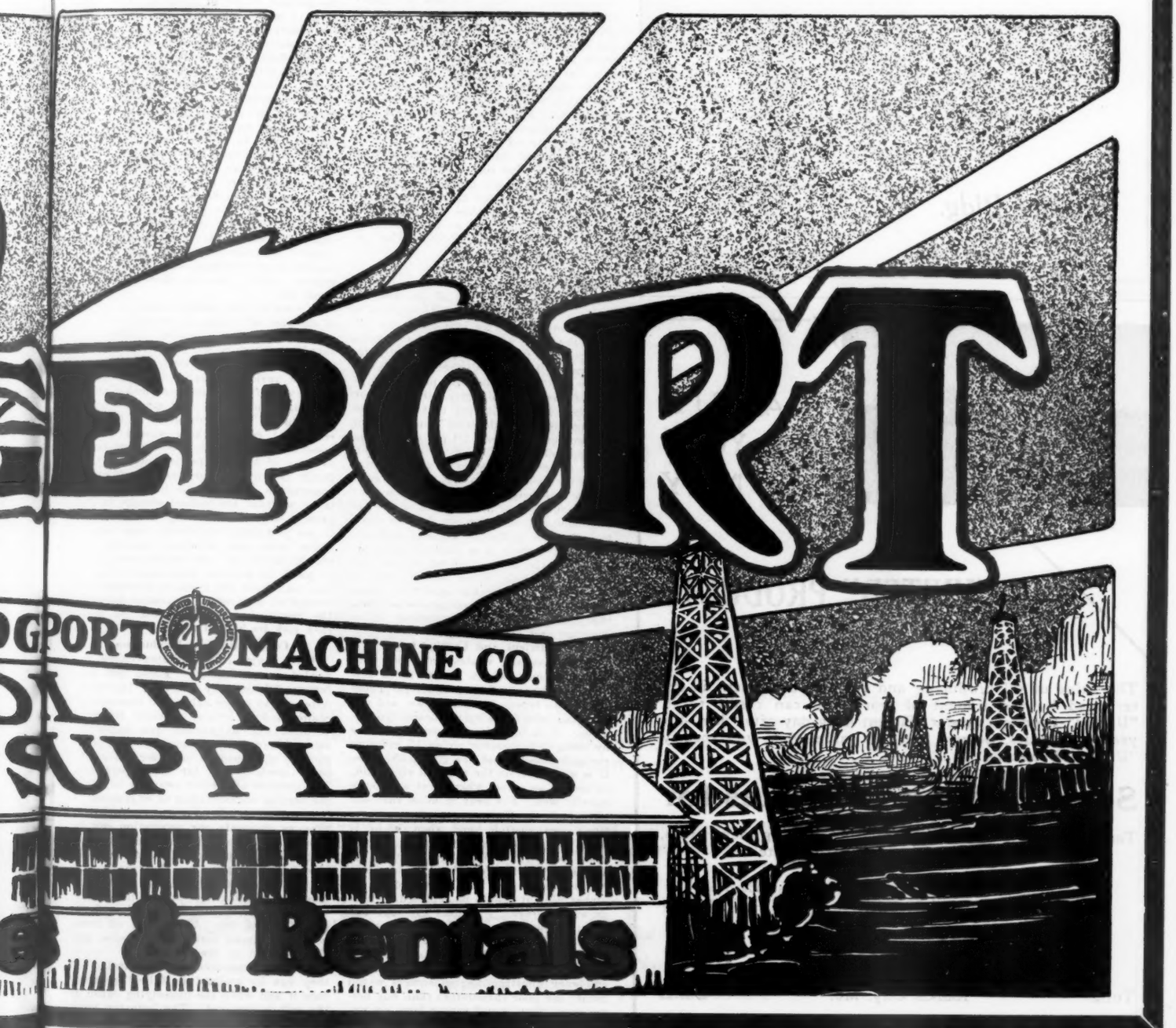


Heat Treated
IDGEPORT
ield Proven

et **Present Day Conditions**

DRILLING AND FISHING TOOLS
OIL FIELD SUPPLIES
SWAN PATENTED UNDERREAMERS
BRIDGEPORT
CABLE ROTARY

Bridgeport field-proven heat-treated tools are making fast, sure work with the deep wells to depths hitherto unknown in the oil fields.



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Contractors

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The value of oil producing and refining equipment is determined by the amount of work you can credit to it. "United" Products render efficient duty day after day—for years and years. So you get full value when you specify "United" Products.

Send Us Your Inquiries for

Tankage, complete refineries, agitators, loading racks, stills, towers, acid tanks, pipe fittings, etc.

Quotations on your requirements in either standard or special equipment will be promptly sent without cost to you.

UNITED IRON WORKS, Inc.

Tulsa Kansas City, Mo. Dallas

SUGGESTED METHODS OF CONSERVATION

(Continued from Page 80)

are negligible in amount or because they have but small bearing on the conservation of supply. As an example of the first type, the losses of oil in storage, pipe lines, and refineries are now generally quite small, as most of the companies, for their own interest, have taken effective steps to curb them. As an example of the second type, the waste of money in needlessly making three filling stations grow where only one grew before, and the capital losses involved, during the overcompetitive drilling of "town lot" fields, in putting down several times as many wells as are necessary to produce a given amount of oil, do not in themselves lessen our reserves by a single barrel of oil. But there are several forms of losses and wastes that are outstanding problems to day and of vital importance to the nation.

Waste of Oil and Gas

During the boom period of many gusher fields a considerable part of the oil and gas brought to the surface is literally thrown away. Under pressure of competition, many wells are rushed to nearly simultaneous completion, and in many cases the resulting output finds inadequate facilities to care for it. The oil is run into hastily constructed earthen storage or open concrete reservoirs, and there is great loss by evaporation, by fire, by seepage, and by destruction of the earthen storage by floods. In some cases much oil has even run off into streams. At the same time great quantities of gas may be produced; if pipe line facilities, a market, and natural gas gasoline plants are lacking, much of this gas is allowed to escape into the air, thus wasting potential heat and power to an amount equal in some cases to several times that of the oil produced.

Low Recovery

Such wastes of fuels are bad enough in themselves, but the loss of gas has an even more serious result. Gas plays a highly important role in moving the oil from the pores of the rocks to the wells—partly by its pressure, and partly by decreasing the viscosity and capillarity of the oil. Even at best the present methods of extracting oil give pitifully poor results. It is estimated that when the average field is "exhausted" and ready to be abandoned, at least 80 per cent of the original oil content is left in the ground. It is essential to conserve gas pressure in active fields and to try to make each foot of gas help in bringing as much oil to the surface as possible. If more gas is produced than is proper to help move the oil (even though such gas is sold and consumed), there is a corresponding increase in the amount of oil left in the ground, which is either lost forever or else will be recoverable only with great difficulty and by improved processes when the extra expense is warranted by a shortage and higher prices.

Inefficient and Unwise Use

But losses and wastes occur not only in production; let us review for a few moments the sins of the consumers. These are of two types—inefficient use, and unwise use, which are by no means synonymous. It is inefficient to waste gasoline by using a carburetor giving 15 miles to the gallon instead of one giving 25 miles. It is unwise, from the national viewpoint, to use oil as a fuel where coal will serve equally well. For bear in mind that our oil supply is limited, coal is comparatively inexhaustible—and when the oil is gone you can't grease your car with a lump of coal! When oil is used, it should be used efficiently, and where it can be spared, and thus conserved for its higher uses, it should be replaced by coal or water power. President Coolidge has said: "Overproduction in itself encourages cheapness, which in turn leads to wastefulness and disregard of essential values." This is true. Cheapness makes efficiency unattractive; consumers would rather use poor carburetors than buy better ones; they would rather burn oil under steam boilers than adopt the more efficient Diesel engines. Similarly for unwise use. During overproduction the industry tries to find new markets for its surplus, and, because of low prices, the use of oil for such purposes as steam-raising and domestic heating is greatly expanded. With such a market established, the price of oil is kept up, and this in turn leads to sustained large production. Thus there is a vicious circle of somewhat artificial supply and demand that helps to deplete our oil reserves. I believe that overproduction should be measured not only by the amount of oil put into storage for lack of market, but also by the far greater amount that is consumed each year for nationally unwise uses.

Means of Conservation

What, then, of conservation? What steps can be taken to use the remaining reserves in the most sensible way?

Greater efficiency of future motors is a matter worthy of intensive study; simple mathematics shows that if mileage can be doubled by improved carburetors, by lighter cars and smaller engines, by the use of mixed fuels, and by better highways, twice as many automobiles as are now in use could be operated with the present output of gasoline. The high price of motor fuel in Europe has forced the adoption of more economical engines; the automotive engineers of America should effect similar improvements before they are forced to do so by public demand. Even the proper adjustment of present carburetors by all motorists would be of marked assistance; it is claimed that an average increase of only 10 per cent in mileage would mean a saving of more than half a billion gallons of gasoline a year, the equivalent of more than 100,000 bbls. of crude oil a day, or the output of 50,000 of our established wells. Surely this is worth saving!

Higher efficiency of Diesel and other engines is of course a problem equally worthy of intensive study, and Diesel engines should replace oil burning steam engines which consume three times as much oil.

In view of the possible future shortage of oil and the range in necessity for its use, it is a fair question whether we should continue to let the law of supply and demand take its course—that is, to let the various users decide for themselves what fuel is most practicable under existing conditions — or whether by a campaign of public education or by Governmental control there should be an apportionment of supply to consumers on a basis of their respective needs. Certainly the national defense is of prime importance and must be insured, but is there warrant for radical change in the present order? Personally, I should like to see petroleum withdrawn from competition with coal wherever possible. I should like to see each barrel of oil made to yield its greatest percentage of gasoline, and have the industry produce just enough oil to satisfy the gasoline demand; the resulting by-product fuel oil could then seek its highest uses.

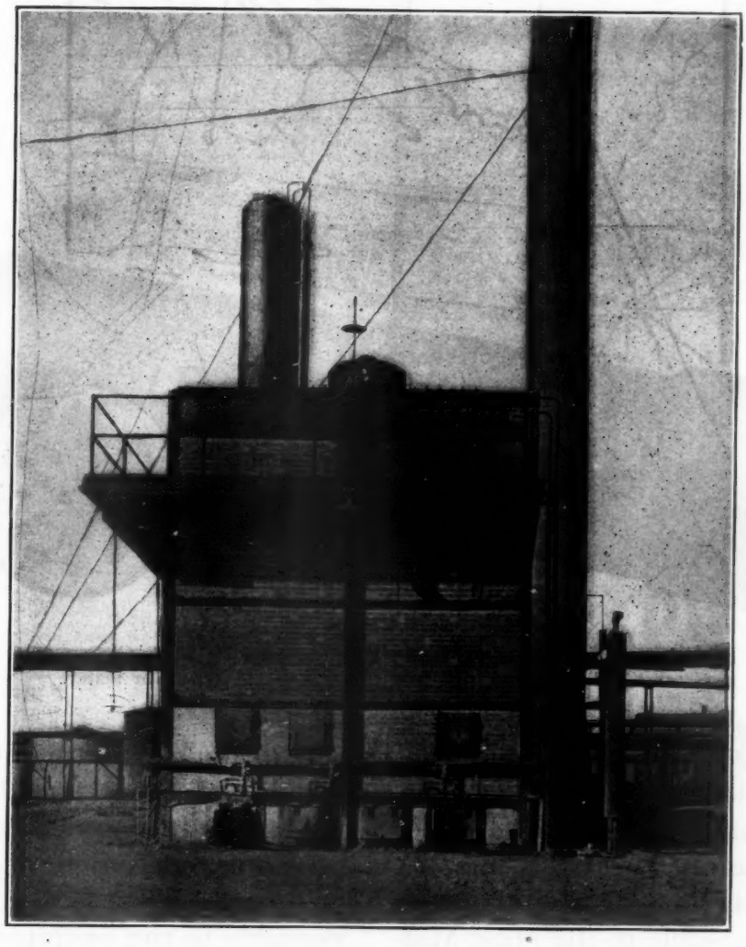
Conservation in Production

Three major lines of improvement are needed in production. First, the percentage of recovery must be increased. Attempts to renew exhausted pressure by compressed gas or air, by water drive, by vacuum, and by natural gas under its own pressure have already met with some success in several of the older fields, but these methods are far from perfected. The problem of greater recovery is worth the serious consideration of engineers; it is bound to receive intense study in future, as obviously our production can be enormously increased if a larger fraction of the underground supply is made available. Second, practices that make part of the underground oil unrecoverable must be eliminated; these include the waste of gas pressure, the careless flooding of sands, etc. Third, the oil must not be produced faster than needed and then dumped on the market.

All these improvements are vital. Yet they can be realized in fullest measure only if and when the underlying cause of the evil is removed. The industry must be freed from that kind of competition

FOSTER

TUBE STILLS



Foster Tube Stills are rapidly replacing shell stills wherever refineries have investigated methods of increasing production and reducing costs. In over 400 installations, Foster Stills are obtaining greater yields of overhead distillate with less fuel consumption than is possible with older types of equipment.

Ordinary tube stills are used for light cuts of 20%, but Foster Tube Stills are successfully taking an overhead of 90% of the thruput without cracking.

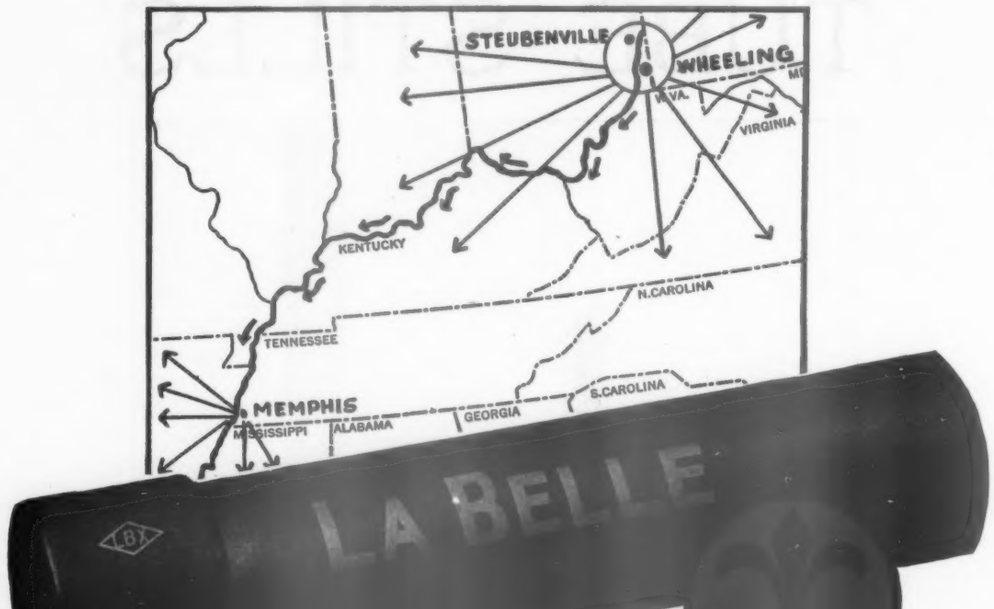
POWER SPECIALTY COMPANY

111 Broadway, New York

Branch Offices in All Oil Centers

Real Casing Service

Plus Real Casing Value



"From Mine to Market"

Manufacturing and distributing points for La Belle Casing and Tubing are within short haul distance by rail or water from practically every field.

LA BELLE Casing and Tubing—all La Belle Oil Country Goods—are manufactured not far from the center of the Great Eastern Field—stocked at a convenient point accessible to the great Mid-Continent developments—available through stocks maintained by well-known agencies *on the ground* in practically every center. Good service means La Belle dependability—worth all it costs to give—indispensable to the operator—greater freedom from grief for the driller.

WHEELING STEEL CORPORATION, WHEELING, W. VA.

Casing and Tubing

LA BELLE

WITH STEEL COUPLINGS

which is now the incentive for hasty and reckless development of new fields. It is not for me to say whether this shall come about through some form of Government control on the one extreme, or whether the antitrust laws should be so modified that companies, for their own benefit, can make agreements to operate each pool as a unit. But until each field can be developed scientifically as a geologic unit instead of piecemeal on the basis of accidental ownership, there can be no real or far-reaching improvement.

In closing, I should like to urge that conservation be made a watchword. Conservation has been defined as "not hoarding, but the wise use of natural resources," and it behooves us all as good American citizens to aid wholeheartedly in making the truest economic use of our national heritage of petroleum.

NEW TRUCK ROLL CALL SHOWS GROWING USE

The extensive use of motor truck transportation and its important relation to industrial and commercial growth is shown by the annual White Roll Call just announced by the White Co. Listing nearly a thousand concerns who operate White trucks and buses in fleets of 10 or more, and representing virtually every line of business, the 1926 Roll Call is the biggest in the company's history.

The new White Roll Call gives a graphic picture of the tremendous growth of motor truck fleet operation. At the beginning of the year there were 961 of the country's foremost truck owners operating 35,755 Whites in fleets of 10 or more. This tabulation shows the big increase of 124 owners and 4,662 trucks and buses over last year's record. The strides made by truck transportation are apparent when it is recalled that the first White Roll Call published in 1916 listed only 86 owners operating White fleets.

MANUFACTURERS' RECORDS OF AUTOMOBILE FIGURES

(Continued from Page 84)

$667,000,000, all but $100,000,000 personal property levies, being special taxes against the motor. The tabulation of taxes follows:

Motor Vehicle Taxes in 1925

Federal		
Passenger car	$111,984,848.42	
Commercial vehicle	8,359,299.53	
Parts, tires and accessories	23,086,560.60	
		$143,430,708.55
Vehicles for hire		1,865,075.43
		$145,295,783.98
State		
Registration fees, including drivers' licenses	$260,619,621.00	
Gasoline taxes	146,028,940.00	
Personal property taxes	100,000,000.00	
		$506,648,561.00
Municipal		
Municipal taxes on the motor vehicle	$ 15,000,000.00	
		$ 15,000,000.00
		$666,944,344.98

(Federal figures from U. S. Bureau of Internal Revenue, State figures from U. S. Bureau of Public Roads, municipal and personal property figures from National Automobile Chamber of Commerce.)

The growth of motor buses is shown in the following table, being the result of an actual census of buses, which represent approximately 80 per cent of the total, made by Bus Transportation and the National Automobile Chamber of Commerce:

Estimated Analysis of Buses in Use January 1, 1925 and 1926

	As of January 1, 1925	1926
Common carrier operations		
Intrastate motor carriers	31,100	30,475
Interstate motor carriers	None	1,500
Electric railways and subsidiaries	3,000	5,150
Steam railroads and subsidiaries	N. C.	375
Total, common carrier operations	34,100	37,500
Non-common carrier operations—		
Hotel buses	1,000	1,000
Sightseeing and tour co...	1,500	2,500
R. R. terminal companies	250	250
Industrial uses	1,075	1,075
Schools (pub. and pri.)	15,000	27,000
Other misc. uses	....	100
Total, non-common carrier operations	18,825	31,925
Total buses—estimated	52,925	69,425

N.C.—Not Classified.

The National Automobile Chamber of Commerce reproduces an interesting tablation made by the Farm Journal showing the number of farm owned cars at the end of 1925, as follows:

Farm Owned Motor Cars, 1925

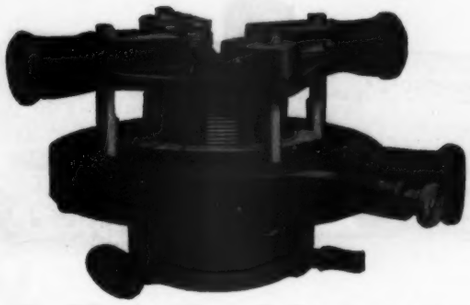
	All Motor Vehicles on Farms	Motor Cars	Motor Trucks
Texas	263,753	242,602	21,151
Iowa	228,735	206,809	21,926
Illinois	225,915	202,475	23,440
Ohio	224,594	192,354	32,240
Pennsylvania	206,841	168,973	37,868
New York	197,758	162,760	34,998
Wisconsin	197,752	172,852	24,900
Indiana	189,026	167,446	21,580
Missouri	183,688	165,132	18,556
Minnesota	173,767	163,612	10,155
Michigan	172,013	157,173	14,840
Kansas	158,809	145,506	14,303
California	156,369	138,133	18,236
Nebraska	146,779	134,056	12,723
Oklahoma	138,553	128,700	9,853
N. Carolina	102,415	96,425	5,990
Virginia	91,045	80,484	10,561
Georgia	89,533	84,530	5,003
S. Dakota	87,667	80,843	6,824
N. Dakota	83,029	76,373	6,656
Kentucky	82,997	77,520	5,477
Washington	72,540	62,702	9,838
Tennessee	61,426	58,143	3,283
Oregon	58,424	52,078	6,346
S. Carolina	57,644	51,956	5,688
Maryland	56,555	48,332	8,223
Mississippi	52,949	49,560	3,389
Colorado	52,158	46,405	5,753
Alabama	44,912	42,390	2,522
Arkansas	43,382	40,041	3,341
Montana	41,448	37,704	3,744
New Jersey	40,726	29,890	10,836
Florida	37,512	30,318	7,194
Massachusetts	36,152	25,410	10,742
W. Virginia	35,658	32,624	3,034
Louisiana	34,276	30,882	3,394
Maine	31,069	26,702	4,367
Idaho	30,944	29,676	1,268
Connecticut	21,772	16,800	4,972
Utah	19,651	18,562	1,089
Vermont	19,563	17,325	2,238
N. Hampshire	17,586	14,773	2,813
Wyoming	15,729	14,297	1,432
N. Mexico	15,724	14,495	1,229
Arizona	12,347	10,890	1,357
Delaware	10,483	8,055	2,428
Nevada	5,018	4,681	337
Rhode Island	4,893	4,077	816
United States	4,332,482	3,853,526	478,956
1924 total	3,821,085	3,453,159	367,926

A study of operating costs of 11 typical cars ranging from $400 to $1,800, as reported in Bulletin No. 69, Iowa State College, shows that 10 cents per mile pays all costs of operation of the average car. The figures follow:

COSTS OF OPERATING AVERAGE CAR
Cents Per Mile, With Percentages

	Light Four Touring		Big Four Touring		Med. Six B Touring		Med. Six B Roadster		Med. Six C Roadster	
	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent
Gasoline	1.40	19.6	1.70	12.9	1.78	19.3	1.80	15.0	1.74	20.5
Oil	.26	.37	.45	3.4	.13	1.4	.38	3.1	.34	4.0
Tires	.96	13.7	1.00	7.6	.85	9.2	1.20	10.0	1.23	14.5
Maintenance	.85	12.1	.72	5.5	.92	10.1	1.37	11.4	.96	11.3
Depreciation	1.62	23.1	4.00	30.4	3.10	33.5	4.40	36.6	3.07	36.1
Interest	1.08	15.3	3.13	16.2	.99	10.7	.51	4.3	.52	6.1
Insurance	.17	.24	.17	1.3	.50	5.4	.97	8.2	.05	.6
Garage	.38	.54	1.80	13.7	.65	7.0	1.00	8.3	.32	3.6
License	.33	.47	1.18	9.0	.31	3.4	.38	3.1	.26	3.1
Totals	7.05	100.0	13.15	100.0	9.24	100.0	12.01	100.0	8.49	100.0

	Light Four Coupe		Light Four Sedan		Heavy Four Sedan		Light Six Coach		Composite Car	
	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent	Cts. Mile	Per Cent
Gasoline	1.61	16.7	1.47	15.2	1.66	14.5	1.29	11.0	1.61	15.7
Oil	.35	3.6	.36	3.7	.38	3.3	.18	1.5	.31	3.0
Tires	.55	5.7	.90	9.4	1.00	8.8	1.11	9.5	.98	9.5
Maintenance	1.56	16.2	1.88	19.5	1.44	12.6	1.43	12.2	1.24	12.1
Depreciation	3.44	35.3	2.92	30.4	4.50	39.5	2.40	20.4	3.16	30.8
Interest	1.77	18.3	.70	7.3	.88	7.7	2.62	22.3	1.24	12.1
Insurance	.15	1.6	.22	2.3	.10	.9	.50	4.3	.21	2.0
Garage	1.05	10.9	.73	7.6	1.04	9.1	.50	4.3	.83	8.1
License	.27	2.7	.44	4.5	.41	3.6	1.70	14.5	.59	5.7
Totals	9.65	100.0	9.63	100.0	11.41	100.0	11.73	100.0	10.27	100.0



If You Buy By Comparison You'll Buy a—

"TOLEDO"

Unquestioned dependability coupled with ease of operation and smooth, perfectly tapered threads—that you will secure from this "TOLEDO" No. 1A ratchet tool.

For real satisfaction in pipe threading specify a genuine "TOLEDO" trade mark tool.

The net cost of a genuine "TOLEDO" No. 1-A complete is **$12.00 NET**

West of Rockies, $12.75 f. o. b. Toledo

THE TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO

How A Plant Saves $3,750 Yearly

IN five boiler furnaces at a western plant, refractory service is severe. Fire clay and other bonding material previously used lacked strength and contributed to the short lining life. Frequent patching was necessary. Linings averaged a service of only one year. Maintenance costs were high.

In an effort to prolong furnace lining life, the furnaces were relined and brickwork laid up with ADAMANT, the *original* high temperature fire brick cement.

Now, furnace linings average *two* years of service. Maintenance costs are 50% lower. The plant estimates that ADAMANT saves $3,750.00 yearly in maintenance of the five boiler furnaces.

Perhaps you can effect similar economies for your boilers, stills, converters, Fuller's Earth kilns and bone black furnaces. A trial of ADAMANT will tell you. Shall we have a representative communicate with you? No obligation, of course, if you fill in and mail the coupon.

Botfield Refractories Co.
783 S. Swanson St.,
Philadelphia, Pa.
New York Office:
5th Floor, 110 W. 34th St.

Send the Coupon!

BOTFIELD REFRACTORIES CO.,
783 South Swanson Street, Philadelphia, Pa.
We are interested in lowering our refractory maintenance costs.

Name and Title _____

Company _____

Street Address _____

City and State _____

TANK CARS

FOR ALL PURPOSES FOR

LEASE OR SALE

Substantial additions to our fleet have just been necessary in order to keep pace with the demands of our growing business.

Quick Service to All Points

Shippers' Car Line Corp'n

30 Church Street, New York, N. Y.

STANDARD OIL ISSUES

CARL H. PFORZHEIMER & CO.

(Specialists in Standard Oil and Miscellaneous Oil Securities)

25 Broad Street New York, N. Y.

COMPLAINTS MAY BE MADE CONTACT POINTS

(Continued from Page 84)

In a certain town served by our company there lived a man who was seemingly unapproachable and very unreasonable. He always felt that the gas company was robbing him, and on every occasion voiced his sentiments along these lines. As he was a prominent man in the community, such statements certainly did not react to the benefit of the company. A company representative, in investigating his high bill complaint, after much persistent effort, induced the customer to go to his home and look over the situation. They arrived at noon, just as the noon meal was being prepared. The company man was confronted with extreme antagonism from the wife, due to, as she said, "too much air in the gas." This erroneous belief resulted from sooting of her new aluminum cooking utensils. A simple adjustment of the mixer, with complete explanation of its operation, removed this trouble to the gratification of the housewife. This, in turn, reacted very favorably on the husband, resulting in a very thorough, open-minded inspection of the entire gas-burning equipment. The real cause of the seemingly high bills was an inefficient appliance installation, which fact was explained to the complete satisfaction of the customer. The company representative listed the appliances to be purchased and work to be done to put the gas equipment in good order, and had the personal satisfaction of assisting in the installation of the complete list. Needless to say, this complaining customer was immediately changed from a knocker to a booster by the simple adjustment of a kitchen range burner, properly followed up.

During the past few years our company has been using a "follow-up card." The advantages of these cards are obvious, as they give the company an actual record that the complaint or "request," as we call it, has been taken care of to the entire satisfaction of the customer. Incidentally, many complimentary remarks are noted on these cards, which inspire all organization members to "open the throttle" a little wider. These complimentary remarks also can be used by the publicity department to good advantage. It is possible that these cards might be introduced as evidence in a damage suit, for example, an explosion. I am not positive that such procedure might be legally possible, but it is a point worthy of consideration.

Complaints, if properly handled, have a great value to any business, particularly the utility business, as they give an opportunity of personal contact between customer and company, with a chance to see actual operating conditions in business or home, where a suggestion might affect economies of operation, with ensuing customer satisfaction; or a chance to explain company policies on various phases of the business, or discuss any of the varied problems of the utility company.

SERVICE TO USERS IS NOW THE SLOGAN

(Continued from Page 73)

in domestic science. They answer questions. They help solve household problems. They show gas users how to save money by eliminating waste. Their fund of information is at the service of all. And they do not ask the inquirer to buy anything.

Service to customers—and to those who are not customers—is one of the things that are helping to obliterate the old notion that a public utility corporation is a thing without a soul.

EASTERN FIELDS

(Continued from Page 68)

drilled a second test on the Dawson farm into the 100-foot sand.

Week-End Completions

The West Virginia fields completed light wells at the close of the week. In the Elk district, Harrison County, the Grasselli Chemical Co. completed in the Benson sand No. 3 on the Robert Shuttleworth farm. It is a gasser. In Clark district, the same company's second test on the Mary F. Renolds farm is a gasser in the fifth sand.

In Elk district, the Hope Natural Gas Co.'s test on the Asa B. Talbott farm is a gasser in the Maxon sand. In Greene district, Wetzel County, the Hope Natural Gas Co.'s test on the Carl Balwanz farm is a gasser in the stray sand.

In the Corning Field, Section 12, Monroe Township, Perry County, Ohio, John Denman & Son completed and shot in the Berea grit No. 20 on the Anna and Mary McGowan farm. It produced 15 bbls. the first 24 hours.

In Lot 7, Monroe Township, Holmes County, the Arkansas Fuel Oil Co. completed in the Clinton sand a second test on the W. H. and M. A. Geis farm. It is a gasser good for 2,000,000 feet of gas.

On the waters of Breeden Creek, Harvey district, Mingo County, West Virginia, A. B. McGrew, Jr. has completed No. 16 on the Logan Cannel Coal Co. lease in the Maxon sand and swabbed 42 bbls. the first 48 hours. It is good for a 30-bbl. well, and is 450 feet north of No. 14 on the same lease. In New Milton district, Doddridge County, West Virginia, Trainor & Travis completed a rig for a test on No. 1 C. L. Ford farm. Morgan Brothers Oil & Gas Co. completed No. 1 on the Bell Willes farm in the Big Injun sand and it will make a small gas well. It is in Union district, Tyler County.

Pleasants County

C. C. Coleman and others completed No. 1 on the W. P. Robinson farm in the Big Injun sand and it is showing for a 3-bbl. well naturally. It is at the head of Long Run in Washington district, Pleasants County. Albert Neely has started drilling No. 1 on the W. T. Cumberlidge farm, on Swanee Run, Lafayette district, Pleasants County.

In Walker district, Wood County, West Virginia, Four States Oil & Gas Co.'s No. 2 on the John J. Leonhard farm was completed in the Maxon sand good for 6 bbls. a day. The South Penn Oil Co. has started to drill No. 5 on the Grant heirs farm in Union district, Wood County, West Virginia.

KENTUCKY-TENNESSEE

(Continued from Page 64)

ducers, 4 more dry holes and the same number of gas wells and a decrease of 464 bbls. in initial yield. The wells were distributed by counties as follows:

County—	Comp.	Wells	Prod.	Dry	Gas
Barren	7	5	73	2	0
Owensboro Dis.	5	4	50	1	0
Warren	4	3	10	1	0
Allen	3	1	2	2	0
Lee-Owsley	2	1	10	0	1
Cumberland-Monroe	2	1	6	1	0
Total	23	15	151	7	1
Last week	16	12	615	3	1
Difference	7	3	464	4	0

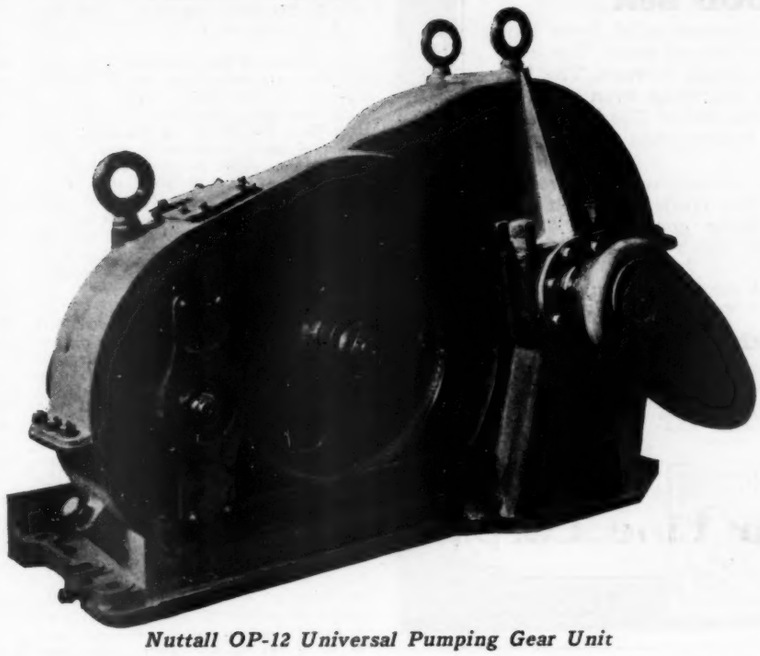
Western Division

Barren County maintains the greatest activity in the western Kentucky division, although the Owensboro district is showing great strides and bids fair to compete with the Barren County Field as numerous wells are being started. Plans were made for a drilling campaign in Allen and Warren, but no great increase is noticeable at this time, while the Cumberland-Monroe-Adair Counties are in for a rush of the drill, especially in the Hopewell Pool along the Cumberland-Adair line.

Barren County

The feature of the Barren County Field at this time is the Knob Road district, where Ziegler Brothers' Nos. 1 and 2 on the C. D. Boyd, are producing around 60 bbls. daily, or about 30 bbls. each, making them valuable producers. This firm struck Black shale at 288 feet in No. 1 on the L. G. and K. Y. Boyd, in the same district and the well is delayed by a crooked hole at a depth of 323 feet. In the same area R. B. Tyler's No. 4 on the White lease, produced 30 bbls. under pump. Along the same road Gillespie and Wiggins' test on the Harrison lease, found the black shale from

The Nuttall Universal Pumping Gear Unit



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345 to 398 feet, and it proved dry at a depth of 555 feet. The Star Oil Co. is drilling a second well on the Richardson lease.

In the Emery-Moore Pool, T. L. Gorby struck top of Black shale at 207 feet and bottom of shale at 262 feet, at No. 2 W. E. Steffey farm. At a total depth of 274 feet or 12 feet in the sand, the well showed a flush of 25 bbls. Fred C. Moore found the Black shale at his No. 7 Bruton farm, from 230 to 280 feet and drilled to a total depth of 490 feet, where it produced 5 bbls. flush. No. 8, same farm, is nearing the sand. T. L. Gorby is drilling No. 3 W. E. Steffey lease. Houchins Leasehold Co.'s No. 10 Mayfield, completed at 605 feet, with in initial of 5 bbls., with No. 11 drilling.

Harrington & Norris Brothers are nearing pay sand with their No. 4 Hutcherson, in the Hall-Baker Pool.

In the Gorby Pool the Hiland Oil & Gas Co.'s No. 16 on the Casaday, after given a shot, produced 8 bbls. initial production. J. W. Porter is drilling near pay sand at No. 16 McGlochlin farm, while Lew J. Emery, Jr., Sons Co.'s No. 3 Jones is due for completion.

In the Lecta Pool, the Esslinger Oil Co. got another dry hole in No. 1 on the McCoy lease, and started drilling No. 1 on the Clark lease.

Owensboro District

Many of the operators suspended work for the winter in the Owensboro district because of the difficulties attending the transportation of supplies and the moving of rigs, but now new rigs are being erected over many new leases. J. C. Miller of the operating firm of Miller & Damron, returned to the field from his home in St. Louis and states that the company will start at once all its rigs in the search of new production. The company already has a good string of wells in the field, and much leased territory not yet exploited.

The White Plains Oil & Gas Co. shot No. 3 on the J. J. Midkiff farm, 400 feet southeast of No. 2 and the flush is reported at around 35 bbls. and will make a 10-bbl. pumper in the Barlow sand. It is in the Midkiff Pool. This company is drilling No. 1 on the William Coleman 125 acres, also starting No. 2 Orella Ralph, southeast of No. 1 on this farm, and an offset to No. 3 Midkiff of the same company.

Cornell & Weatherholt's No. 1 in the northeast corner of the Askins lease, went to a depth of 786 feet and dry, there being no showing in the Jett or Barlow sands.

In the Pellville Pool, the Leeper Oil Co.'s No. 1 on the Monroe Colyer 125 acres, is reported at 10 bbls. in the Jett sand. This adjoins the Amanda Stewart about 2 miles southeast of the town of Pellville.

J. M. Loman, trustee, drilled in No. 2 on the Joe Bob Ellis lease, in the Swope Pool, getting a 15-bbl. pumper in the Barlow sand and will start No. 3 as soon as the rig and tools can be moved to the location.

The Chicago Petroleum Syndicate's No. 4 on the Guenther-Gant 270 acres, and east of the Ellis farm, in the Swope Pool, is reported a 15-bbl. pumper from the Barlow sand. No. 5 will start drilling soon. The same company has drilled in but not yet shot its No. 1 on the Mrs. Nannie Brown farm. It bids fair to make an average producer and adjoins the Guenther-Gant lease and is an offset to No. 1 on the Joe Bob Ellis lease. Oil was found in the Barlow sand.

The Pennsylvania-Indiana Oil Syndicate is putting in a rig for No. 2 on the W. S. Griffith 270 acres, and 400 feet north of No. 1. This company is drilling No. 4 and located No. 5 on the Laura Mercer. The Leeper Oil Co. set a stake for a well on the Probst 37 acres to the southwest of No. 1 on the Monroe Colyer farm, in the Pellville Pool. This company is starting a test on the J. A. Green 100 acres, southwest of the Midkiff Pool.

Clarence A. Leeper, for the Leeper Oil Co., has purchased the lease on the Col. Powers farm from the Foster Oil Co., upon which there are two wells drilled, one being a producer. A rig is under way for the starting of No. 3 on this lease. Mr. Leeper is an old-time eastern operator and spent many years in the Lima, Indiana, and Illinois fields, as well as in the Mid-Continent fields.

The Creek Drilling Co. is moving its drilling outfits from Breckenridge County back to the Owensboro district. This company drilled three wells in Breckenridge County for the Ohio Oil Co., but there was no show of oil in any of them.

White & Nicklin are starting up drilling at their No. 8 well on the Burdette farm, and located 400 feet east of No. 7. This well has been shut down for a few months.

The Panther Creek Oil Co. is starting a well on the John A. Smith 120 acres. It is No. 11, located 800 feet west of No. 7, same lease.

The Pennsylvania-Indiana Oil Syndicate failed to find a commercial pay in its No. 6 on the R. B. Powers 110 acres and 400 feet east of No. 2, same lease, and is now drilling deeper in hopes of encountering some new producing formation below the Barlow sand.

Cumberland-Monroe-Adair Counties

With the influx of operators from the Louisiana Field into the Hopewell Pool along the line of Adair and Cumberland Counties, there is to be an active drilling campaign on structures that have already produced excellent producers like those of Baird & Hickman on the Brockman and Grider leases and the Wood-Haislet-McLennon and others on the G. W. Brockman lease. Two wells are due for completion in the new pool within a very short time, one for Baird & Hickman on the J. H. Morgan and one on the Baird Hickman fee farm, for R. M. Belnap of Sistersville, W. Va. Baird & Hickman have just shipped into Columbia, the headquarters of the field, two carloads of material, and are also shipping in household goods, saddle horses and power tubing and R. M. Belnap has moved a car of material to his lease. Wood, Haislett, McLennon & Calhoun are erecting one 500 and two 250-bbl. tanks on the George W. Brockman lease.

R. S. Thrasher has moved a new machine on the Grider leases in the Hopewell Pool and will recover the tools lost in the hole when this well blew in, caught fire and destroyed the rig. This well was turned on the first of the week and started flowing at better than 200 bbls. in 24 hours. When the tools are recovered this rig will be moved to the Hard Hadley lease, 1¼ miles north of the Grider and just north of Hopewell church. This lease is owned by Baird & Hickman of Shreveport, La.

Two completions were reported for the week, both being in the Sulphur Creek district of Cumberland County. Wilcox Brothers, of Cleveland, Ohio, brought in their second well on the Davis farm, good for 6 bbls. at a depth of 386 feet, in the first Sunnybrook. There was 135 feet of 6¼-inch casing, the top of the first Sunnybrook being found at 376 feet and drilled 10 feet in. W. S. Raydure and Son, struck a nice pay at 720 feet, at No. 5 M. M. Coop farm, the hole filling up 300 feet with fluid shortly after tapping the pay.

On Salt Lick Bend, the Martinsville Oil & Gas Co. is drilling a test on the H. Flin lease, a considerable distance from producing wells.

Baird & Hickman are spudding at No. 1 Barger lease, in the Crocus Creek district.

Warren County

Three completions are reported from the Bowling Green Field of Warren County. The American National Bank drilled in No. 10 on the Gillespie 50 acres, for a 3-bbl. pumper at 1,140 feet. A. B. Hudson, attorney, found a 5-bbl. pumper at No. 2 James Dethridge farm, while the American National Bank brought in a duster in No. 9 on the Ben Ford lease, at 490 feet. Onsel-Hanrahan Oil Co.'s No. 12 Mary Ferguson farm, pumped 2 bbls. at 260 feet.

The only new well reported starting is A. B. Hudson's, attorney, No. 3 James Dethridge farm.

Three completions were reported in the Scottsville Field of Allen County, two being dry, the other a light pumper. The Citizens Oil Co.'s No. 15 on the I. H. Rickman farm, pumped 2 bbls. at 408 feet and No. 16 is drilling.

Huffman, Phillips and others' No. 10

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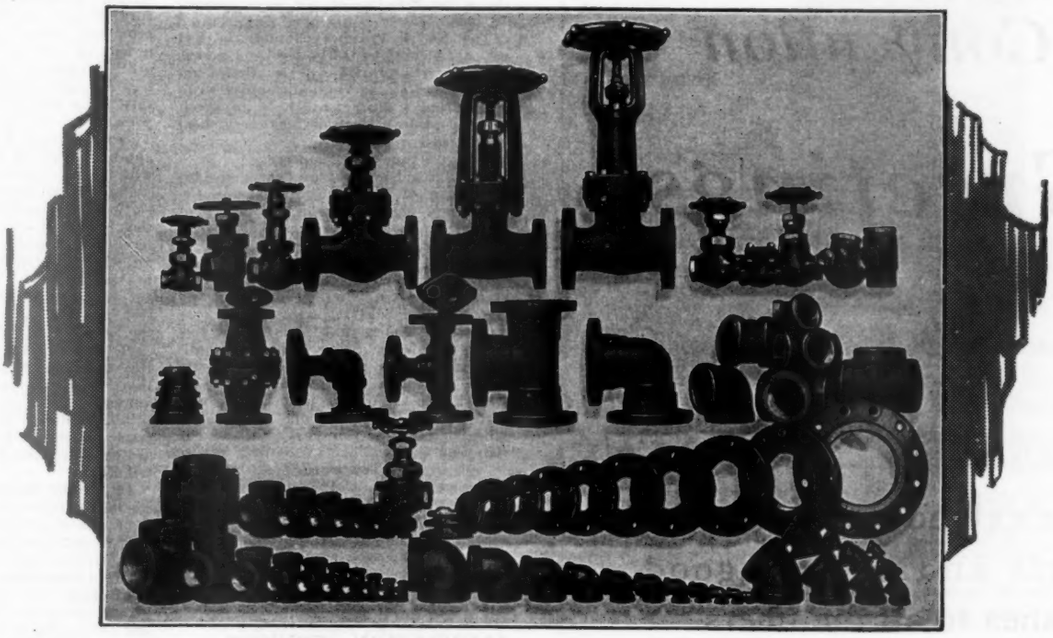

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Dovie Mantelle farm, was dry at 380 feet, and Ziegler and others' hit one of the same kind in a test on the H. Ayres farm, at 283 feet.

The West Penn Oil Co. is drilling No. 12 G. W. Pearson and Reaher and others are drilling No. 1 John Farley.

Eastern Division

In the eastern division of Kentucky the only completions reported come from the Lee-Owsley County, both being owned by the Petroleum Exploration Co. Its No. 1 on the W. S. Treadway lease, in the Idamay Field, showed a gas volume of 1,800,000 feet while its No. 13 on the Miller-Prewitt-Goff big lease pumped 10 bbls.

The No. 1 Treadway struck the gas pay at a depth of 1,314 feet and makes 28 gas wells drilled by the Petroleum Exploration Co. in Owsley County, without getting a duster, which is an excellent record on a block of 7,000 acres held under lease.

Improves Property

The Trico News says: "Since the organization of Petroleum Purchasing Co two years ago when the equipment of the Indian Refining Co. was taken over in Lee and Estill Counties, Kentucky, a number of improvements have been made on the property. Especially is this true at Ravenna, Ky., where the railroad and river loading stations are located.

"On the Tipton tank farm a new tool house and boiler house have been built and an addition made to the pump station. Telephone service has been installed with the other stations. The new state road between Ravenna and Beattyville, permits easy access with a car the year around."

Tennessee

Across the state line from Cumberland County, Kentucky, in Clay County, Tennessee, in the Lower Kettle Creek area, the Comestock & Smedley Co., at a depth of 286 feet, struck a heavy pay of gas in No. 1 on the Riley Kerr lease, but is drilling deep and at last report had reached 300 feet.

ASSOCIATION SERVICES STRESSED BY McKAY

(Continued from Page 70)

and Texas Independent Telephone Association. It circulates to all members of the Oklahoma Utilities Association and generally throughout Oklahoma, Texas and Louisiana.

(d) Special News—Special articles and news items are furnished from time to time to newspapers and trade journals interested.

Other Activities

Other major activities of the association include:

(a) Meter School (Gas)—An annual gas meter school at the University of Oklahoma, the scope of which is indicated by its name. This school was established in 1924, and has grown each year; attendance in 1924 was 75; in 1925, 145 and in 1926, 275.

(b) Gas Conservation School—A gas conservation school, held annually at Bartlesville, Okla., in connection with the United States Bureau of Mines Experiment Station, deals exclusively with technical operating problems.

(c) Meter School (Electric)—An annual electric meter school at the University of Oklahoma was organized in 1924. The attendance in 1924 was 53; in 1925, 76 and in 1926 (to be held May 25-28). The scope of this school is also indicated by its name.

(d) District Meetings (Telephone)—Eight district meetings are held annually by the telephone division.

(e) District Meetings (Electric)—Three district meetings are held annually by the electric division.

(f) Midyear Gas Conference—An annual midyear gas conference is held by the gas division.

(g) Midyear Electric Railway Conference—An annual midyear electric railway conference is held by the electric railway division (informal).

(h) Speakers' Bureau—Speakers' bureau work in Oklahoma is divided into 30 districts, each under a district chairman. Its organization was effected July 1, 1925. Record of eight months, ending March 1, 1926, showed 611 talks with aggregate audience of 115,000 persons. A speakers' bureau bulletin summarizing district reports is issued to district chairmen each month. Radio talks are made by representatives of the association from time to time.

(i) Educational Pamphlets—Pamphlets on "Electricity" and "The Telephone" are circulated through schools. Pamphlets circulated in 1925, 2,000; in 1926, 20,000. A pamphlet on "Gas" is to be issued.

(j) Rural Lecture Project—The association co-operates financially with a rural lecture project, which is primarily promoting home trading but incidentally promoting friendly relations toward the utility industry in rural regions. The lecturer uses public utility motion picture films and slides and refers to importance of utilities to rural betterment. This work began August, 1925. It reaches approximately 25 audiences each month with average attendance of 175.

(k) Rural Electrification—The association has organized a rural electrification project in Oklahoma. The first conference was held in May, 1925; five additional conferences have been held up to May 1, 1926. The association manager is chairman of the general committee. A state survey has been made and the work is organized definitely.

(l) State Fair Exhibit—The association maintains a public relations promotional booth at the Oklahoma State Fair annually. This project was established in 1923. Motion pictures are used to attract audience. Maps, charts, slides, etc. are exhibited and educational matter distributed.

(m) Joint Radio Committee—A joint committee representing the telephone and light and power divisions has been created to study radio interference and minimize friction and misunderstanding.

(n) Co-Operation With Educational Institutions—A 4-year course in public utility administration has been arranged and announced by the University of Oklahoma, effective September, 1926.

(o) Engineering Service—The association employs an engineer for the benefit of members. He is a former telephone engineer of the Coporation Commission of Oklahoma, and his activities are chiefly in the interest of telephone company members and include matters of construction, operation, accounting, financing and making reports to the commission. Several cases, chiefly in the interest of small telephone companies, have been prepared and presented with successful results, and in one case the association engineer acted as a referee for the district court and settled a litigation of four years standing between two telephone companies. His investigation took more than a year but immediately upon his appointment injunctions, preventing construction projects by both parties, were lifted and normal expansion of business permitted. Relations between telephone and electric companies, involving inductive interference have profited by the availability of this engineering service.

(p) Reference Files—Extensive reference files covering all branches of the utility industry are kept. Newspaper clippings service is given careful attention and proving a valuable check on public relations of members, enabling the association to make suggestions from time to time. The association keeps a complete file of Corporation Commission orders and latest utility directories and manuals. Large wall maps are kept showing location and ownership of all properties, municipal or private, in all branches of the utility industry. Schedules and curves showing utility rates effective in Oklahoma also are kept up.

(q) Income Tax and Traffic Bureaus—A working relationship between the association and a nationally known Income tax and audit bureau and a similar relationship with an Oklahoma traffic bureau make complete and dependable information service touching these subjects available to members without cost, except where members may see fit to contract for special service.

(r) Interassociation Relationships—The Oklahoma Utlities Association is ac-

tively affiliated with the American Gas Association and co-operates actively with the National Electric Light Association through the Southwestern Geographic Division, and with the American Railway Association, Natural Gas Association of America and United States Independent Telephone Association. It also is represented by membership in the National Editorial Association, the Public Utilities Advertising Association and the Associated Advertising Clubs of the World.

Locally, it is represented in the membership of various civic and commercial organizations. During the past year the manager acted as chairman of the general convention committee for the convention of the Seventh District, Associated Advertising Clubs of the World, and through this contact effected the organization of the Public Utilities Advertising Departmental in the Seventh District, A. A. C. of W.

(s) **Annual State Convention**—The association holds its annual state convention in March each year. The divisions meet both jointly and separately. The convention continues for three days and always offers numerous speakers who have been on national utility convention programs during the preceding year.

Our association also has a Manufacturers and Suppliers Division. Approximately 75 manufacturing and supply companies, or their Oklahoma representatives, carry membership in the association.

CALIFORNIA FIELDS

(Continued from Page 56)

paratively small. No. 3-B Reyes is producing 80 bbls. of 29.2 gravity oil daily from 4,173 feet, while No. 32 Reyes is flowing 110 bbls. of 29.6 gravity oil from 3,969 feet. The company is at present drilling ahead in Nos. 33 and 101 on the Reyes property but is held up temporarily with water trouble in No. 31. The Union is working on only two drillers in this field, No. 14 Callender and No. 14 Hellman, but has three or four cleanout jobs on its hands. The Union and Shell have been conducting a series of exhaustive experiments in this district and it is believed that something definite will be determined in the near future as to the possibility of stimulating production by resorting to the Marietta process of introducing dry gas into the formation. Work today has only been of an experimental nature and, while preliminary tests indicate that it can be used to advantage, it remains to be seen whether this method will prove advantageous as well as economical.

The Chanslor-Canfield Midway Oil Co. chalked up a 130-bbl. pumper by completing No. 68 Del Amo in the Torrance Field at 3,487 feet. This well, which was finished with a 6¼-inch oil string, is yielding 20.1 gravity oil which shows a cut of 3 per cent. No. 89 Torrance did not get away on schedule and, although it was finished at 3,616 feet, sand trouble prevented it from being actually completed. In addition to these two wells, the company is working with Nos. 39 and 63 on the Del Amo property, both of which should come into production some time during the next 30 days. The General Petroleum has found it necessary to recondition No. 1 Carson because of a severe decline in production and it is being cleaned out to bottom, 3,400 feet. The Petroleum Securities has just finished No. 1 Hogan at 3,805 feet and a 6¼-inch oil string is being run in. The well has a penetration of about 250 feet and looks good for about 100 bbls. daily upon completion. The R. & D. Oil Co. also finished a driller in this field, No. 2 Craven, and it will probably start off pumping somewhere around 75 bbls. a day.

Huntington Beach

The Wilshire Oil Co. and the Julian Petroleum are the first two operators to start work in the newly opened area at Huntington Beach and, although neither has yet spudded in, they should be in a position to do so within a short time. The former is erecting a steel rig at Twenty-first and Walnut, while the latter has just about completed construction work on the Lambedt property at Twenty-second and Orange Streets. Operators are at variance as to whether the town lot area is an extension of the old field or whether it is a separate and entirely distinct structure with the axis paralleling the coast line. There is not sufficient data available upon which to base a conclusive opinion but it is a matter of record that producing wells in the southern part of the Standard's Lease B, adjacent to the newly opened section, yield larger production than those located further north. The Standard has tentatively selected a location for a new well to be designated as No. 47 on Lease B, which will be only a few hundred feet from the northern limits of the new town lot area, but it is doubtful if any immediate work will be undertaken.

The California Petroleum has taken over the Buck property, formerly held by King Gillette in the northern part of the field and drilling is already under way. In view of the work done by the Standard in this section, the location is not looked upon with a lot of favor. The Sun Oil Co. has recompleted its No. 3 at 3,400 feet and it started off pumping 155 bbls. of 22.1 gravity oil daily. The Golden Dome Oil Co. found some fairly good looking showings at 3,205 feet and preparations were immediately made to land a string of 8¼-inch. The United is making fairly good footage with its No. 1 Pacific which, during the early part of the week, was rotating ahead in a hard sandy shale at 4,138 feet.

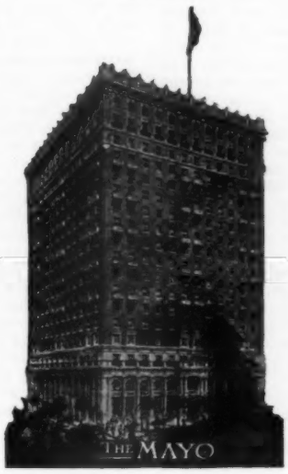
Fullerton

The Shell completed No. 10 Orange in the Fullerton Field at 4,790 feet and finished the hole with a 6¼-inch oil string carrying 1,385 feet of 80-mesh screen. It did not come up to expectations, however, notwithstanding the fact that it is a flowing well doing 230 bbls. of 28.9 gravity oil daily. It is flowing through a 1-inch bean under a pressure of 650 pounds and it is quite possible that the output will later build up commensurate with the heavy pressure registerd. The Shell has three additional drillers on this property, one on the Fisher and another on the Pico lease. The Union has not yet picked up any favorable indications in either No. 1 Olinda at 4,390 feet or No. 2 Olinda at 3,340 feet. Both are extension wells and, because of the fact that they have exceeded the depth at which production was anticipated, the outlook is not any too favorable. The Fullerton Oil Co. is still held up with water trouble in its No. 19-A, drilled to 5,398 feet, but later plugged back to 5,075 feet. The Birch Oil Co. has a redrilling job on its hands in its No. 1-A and will probably be held up for several weeks because of a caving hole.

H. J. Keoughan, trustee for the Continental Oil Co., has staked a location for his second well at Richfield to be drilled due west of the Wonder Oil Co.'s No. 4 Kraemer. This location is favorable and will probably result in a 300-bbl. producer. The Union has been going along slowly in this area as far as new work is concerned but the rigging up of rotary equipment in No. 5 J. W. Newell indicates the addition of another string of tools. The California Petroleum, Standard and General Petroleum each have two drilling projects which should come into production some time within the next 30 days, unless something unforeseen develops.

The St. Helens Petroleum is stepping right along with its development work in the Montebello Field and the company is now running four strings of tools in that area, having just spudded in No. 3 Mulholland. In addition to this well, the company is drilling ahead in No. 11 Monterey at 3,500 feet, No. 12 Monterey at 3,482 feet and No. 5 Piuma at 3,390 feet. The Standard's drilling operations in this district consist of No. 67 Baldwin at 3,469 feet, No. 17 Temple at 3,142 feet, No. 1 Harvey at 3,485 feet and No. 3 Howard-Smith at 3,468 feet. The Union has just spudded in its wildcat, No. 1 Bryant, at Seal Beach, located on property north of the Shell's Bryant lease, and work will be pushed ahead to a successful conclusion. The Marland is making hole in its No. 1 Bixby at 5,487 feet

THE MAYO
TULSA



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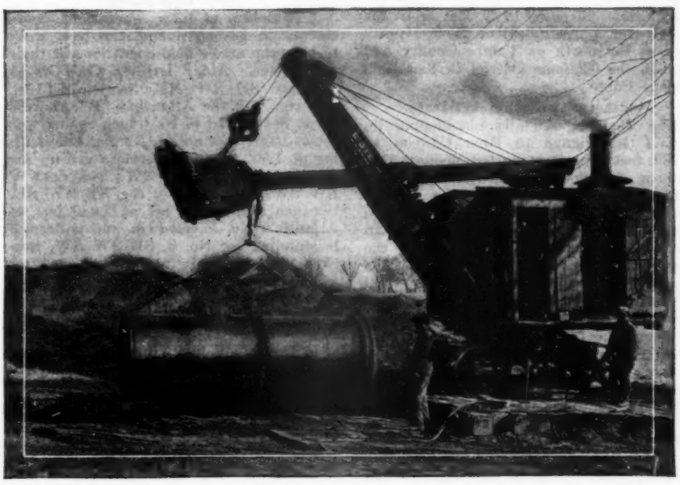

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but it does not look as though this well will be instrumental in developing a deeper zone in the Seal Beach area.

Midway-Sunset

The Balboa Oil Co. completed its No. 54 in the Midway-Sunset area, Section 24-31-23, at 4,010 feet and it came in flowing 565 bbls. of 26.2 gravity oil daily. The North American Consolidated will increase its development program in the near future, as rigs are going up for Nos. 36, 40, 41 and 42 in Section 30-31-24. The Standard is hauling in material for No. 3 Rass in Section 10-11-23, and this well, together with the Union's No. 1 Lewis, approximately 600 feet south, will get under way shortly. The Union's new work will consist of deepening the Lewis Petroleum's old No. 7, which was abandoned about two years ago at 4,807 feet, and the company will carry this well down in an effort to develop commercial production in the same sand from which the Standard is producing on the Rass lease. It will require about 300 feet of new hole as No. 2 Rass is producing from 5,162 feet.

The Lewis Petroleum is making a splendid showing in Section 17-11-23, where it is developing shallow production. Nos. 13 and 14 are making approximately 75 bbls. each from 857 feet and it looks like the company will finish another good well shortly as No. 15 is just about ready for completion at 835 feet. The Belvedere Oil Co. has cemented its No. 8 Lewis in Section 6-11-23, after deepening it to 2,150 feet and indications point to a successful completion within the next two weeks. In the extreme northeastern corner of this section and a half mile northeast of the Belvedere's well, the General Petroleum is making preparations to complete its No. 10 Essex with a good prospect of bringing in a 300-bbl. producer. The Union is evidently contemplating an early completion of No. 14 at Elk Hills and the starting of another well shortly, as a rig is going up for No. 15. The Shell is preparing to drill a test on its 2,000-acre block of leases in the San Emidio district and the company's white flags placed for triangulation purposes may be seen for miles over a great deal of Kern County and as far north as Tulare County and also in the Chalome district in San Luis Obispo County.

Southern California Wildcats

The Shell is officially abandoning its No. 1 Menchango in Brea Canyon at 2,702 feet and has started dismantliing the rig and removing all equipment. The Union's No. 1 McNally at La Mirada is drilling ahead in a blue shale at 5,355 feet but it would not be surprising if an early abandonment resulted, due to the lack of any showings of importance. The Manhattan-Hermosa Beach area will prove a very strong attraction to wildcat operators during the next 30 days because of the fact that the Julian Petroleum Corp. and George W. Johnson are nearing the point at which the pay is expected. The former's No. 1 Trust at 3,350 feet and the latter's No. 1 Martin at 3,120 feet should reach the 4,000-foot level within the next two weeks. There is still some leasing being done in this vicinity and, although several of the larger companies do not concur in the belief that commercial production will be secured, they have taken the necessary precaution to secure protective acreage.

The Milham Exploration Co.'s second wildcat at Playa del Rey is drilling ahead in a hard gray sand at 4,846 feet and, although there have been no favorable indications logged to date, drilling will continue. The Barnsdall has started rig construction for No. 1 Merlo in the Puente sector and will probably spud in some time within the next two or three weeks. The Standard reports No. 1 University, its San Fernando wildcat, at 561 feet, the formation being a rather hard conglomerate. Although the company has material on ground for No. 1 Austin, its Topango Canyon wildcat, spud will probably not be made for two or three weeks, as some road construction will be necessary to facilitate the handling of equipment.

The Union's second structure survey hole, No. 1 Theta, northwest of the old Belridge Field in Section 23-28-20, is drilling ahead in a hard sand at 1,150 feet. The Milham's No. 1 Hyde at Buttonwillow, rotating ahead in a similar formation at 1,161 feet, is slightly deeper. W. W. Taylor spudded in a new wildcat near Clovis in Fresno County and he will land some surface pipe during the latter part of the week at about 350 feet. The Associated is still held up with its Huron wildcat in Section 20-19-17 at 1,770 feet because of mechanical trouble. The Bolsha Chica Oil Co. cored a second oil sand in the Kettleman Hills at 1,920 feet but, due to the fact that it has just been picked up, it is impossible to ascertain whether it will prove of any importance. The next core, however, should shed more light on the subject. The company made a production test some time ago at 1,798 feet but the sand found at that depth was not sufficiently saturated to result in production, although the well did make about 2 bbls. of oil before pumping off.

Hoyt S. Gale's Camarillo wildcat is in a brown sandy shale at 3,930 feet but it does not look as though he will be successful in developing production, in view of the fact that the initial hole did not show anything of importance. The Shell's No. 1 Berlywood at Moorpark is drilling ahead in a hard conglomerate at 3,845 feet with the outlook not any too favorable. The Chanslor-Canfield Midway Oil Co. is experiencing considerable difficulty in cleaning out its No. 1 Hobson, a Ventura County wildcat, and no footage has been made for the past several weeks, due to the loss of approximately 500 feet of 4-inch drill pipe.

N. LOUISIANA-ARKANSAS

(Continued from Page 54)

2,100 feet and is flowing 5 bbls. daily through 2-inch tubing; No. 2 is flowing 20 bbls. daily through the 2-inch tubing from sand at 2,097 to 2,122 feet and No. 3 is flowing 60 bbls. daily through the tubing from sand at 2,085 to 2,105 feet.

New Operations

A number of new operations were started in Lisbon during the past week to keep the area's field operations at their usual pace. Alday Drilling Co.'s No. 1 Murphy, SE SW NE, Section 4-17-16, is a rig. On the Atlantic's "B" Andress lease, Section 16-17-16, 6-inch casing was set at 2,091 feet at No. 3; No. 4 is drilling at 1,902 feet and derricks are up for No. 5, SW cor. NW SW; No. 6, NW SW SW, and No. 7 in the NE SW SE. Six-inch casing was set at 2,080 feet at Atlantic's No. 1 Goodwin and a derrick is standing for No. 8, SE SW SW, Section 16-17-16. Six-inch casing was set at 2,072 feet at Atlantic's No. 2 Goodwin, same section.

Bond & Evans' No. 3 Kilgore, NE SE SW, Section 4-17-16, is a rig. Three hundred feet of oil is in the hole at Foster & McWilliams' No. 2 Mooty, Section 15-17-16, which had the sand at 2,128-67 feet, and 2-inch tubing is being lowered. Hatfield and associates' No. 2 Ennis, Section 23-17-16, has a showing of oil in 30 feet of sand topped at 2,152 feet and the liner is being bailed. Hickman and associates are drilling out the plug at 2,061 feet at No. 1 Slaughter, Section 3-17-16. Surface casing was set at 164 feet at Humble Oil & Refining Co.'s No. 2 Goodwin, Section 16-17-16, and No. 1, formerly No. 3, is a rig. Humble's No. 2-A Slaughter, Section 9-17-16, is drilling at 1,450 feet. The bit is being sidetracked at 640 feet at Imperial Oil & Gas Co.'s No. 2 Primm, Section 21-17-16.

J. P. Kelly's Lisbon extensioner, Section 20-17-16, is in 29 feet of sand topped at 2,145 feet with 70 feet of oil in the hole and is waiting for orders. Six-inch casing was set at 2,060 feet at Magnolia's No. 7 Dumas, Section 9-17-16, and No. 8, NW cor. S half SE NE, is drilling at 1,500 feet. Magnolia's No. 9 Slaughter, Section 9-17-16, is a rig. Marine Oil Co.'s No. 2 Graham, SE NE SE, Section 16-17-16, is a rig. On the Marine's Slaughter lease, Section 9-17-16, No. 6 is waiting for the 6-inch to set at 2,112 feet and 6-inch is being set at 2,077 feet at No. 7. The cement plug is being drilled out at Miller & Cottingham's No. 5 Slaughter, Section 9-17-16. Natural Gas & Fuel Corp.'s No. 5 Andress, Section 16-17-16, is drilling at 380 feet and a derrick is being built for No. 1 Willett, SW SE NE, Section 4-17-16. Ohio's No. 2 Goodwin, Section 21-17-16, is a rig. The cement plug is being drilled out at Owens and associates' No. 4 Slaughter, Section 4-17-16, and a derrick is being built for No. 5 center north line south half SW SE, Section 4-17-16.

Other Operations

Pure Oil Co.'s No. 3 Dumas, Section 9-17-16, has 300 feet of oil in the hole from sand at 2,101-34 feet and is waiting for a standard rig, and a rig is up for Pure's No. 4 Dumas, center east line SE NW, Section 9-17-16. Pure's No. 2 Slaughter, Section 4-17-16, is drilling at 1,855 feet. Surface casing was set at 63 feet at Reynolds & Marr's No. 1 Mooty, Section 22-17-16. Six-inch casing was set at 2,070 feet at Rovenger Oil Corp.'s No. 6 Dumas, center east line SE SW, Section 9-17-16. On the Rovenger's Graham lease, Section 16-17-16, No. 2 is bailing to test 26 feet of sand topped at 2,039 feet and a derrick is up in the NE SE SE for No. 3 Graham.

Roxana Petroleum Corp.'s No. 1 Dumas, Section 9-17-16, is bailing to test 35 feet of sand topped at 2,053 feet. On the Flourney lease, Section 4-17-16, Roxana's No. 3 is being bailed to test 37 feet of sand topped at 2,105 feet; No. 3 is drilling at 720 feet. Simms Oil Co.'s No. 1 Kilgoe, Section 4-17-16, is waiting for cement to set at 2,125 feet. On the Simms' Perry lease, Section 16-17-16, No. 4 set surface casing at 147 feet; No. 5 is drilling at 152 feet and surface casing was set at 137 feet at No. 6. Southern C. O. P. Co.'s No. 2 Slaughter, Section 3-17-16, is drilling at 550 feet.

Stock and associates' No. 1 Dumas, Section 10-17-16, has 60 feet of oil in the hole from sand at 2,106-13 feet and is waiting for a standard rig. Wingfield and associates' No. 8-A Dumas, Section 9-17-16, is waiting for the 6-inch to set at 2,062 feet; No. 9-A is drilling at 1,650 feet and surface casing was set at 61 feet at No. 10-A. Same operators' No. 9 Slaughter, Section 9-17-16, is being bailed to test 29 feet of sand topped at 2,073 feet. T. J. Woodley's No. 3 Dumas, Section 9-17-16, has 1,200 feet of oil in the hole from sand at 2,087 feet and is waiting for a standard rig.

Norphlet Area

In the Norphlet area, seven completions were recorded. E. M. Jones' No. 2 Murphy, Section 17-16-15, was completed pumping 200 bbls. of oil, 98 per cent salt water, at 2,658 feet; Lion Oil & Refining Co.'s No. 6-A Murphy, Section 7-16-15, is an abandoned location; Roxana Petroleum Corp.'s No. 4 T. D. Murphy, Section 7-16-15, is an abandoned location; Unity Petroleum Co.'s No. 2 Lawton, Section 10-16-15, was completed, making 5,000,000 feet of gas and 60 bbls. of oil at 2,635 feet; Williams and associates completed No. 2 Goodwin, Section 16-16-14, dry and abandoned at 2,765 feet.

Estes and others completed No. 3 Murphy, Section 15-16-15, flowing 65 bbls. from 4 feet of sand topped at 2,456 feet; Humble Oil & Refining Co.'s No. 3-B Flenniken, Section 9-16-15, was completed estimated making 30,000,000 feet of gas, dry, from 11 feet of sand topped at 2,727 feet.

Smackover Heavy Field

In the Smackover heavy field, there were only two completions during the past week. H. L. Hunt's No. 1 Swilly, Section 28-16-16, was completed flowing 66 bbls. of oil, from 3 feet of sand topped at 2,675 feet; W. H. Gilliland's No. 2 Hodges, Section 1-16-17, was junked and abandoned with casing in the hole at 2,557 feet.

El Dorado Field

In the El Dorado Field, there was one completion, being Thurman and others' No. 1 Burns, Section 11-17-16, which is an abandoned location. Six-inch casing was set at 2,160 feet at Arkansas Drilling Co.'s No. 1 Rogers, Section 20-17-15; a rig is up for Calago Oil Co.'s No. 1 Primm, Section 9-18-17; Broderick & Calvert's No. 7-B Murphy, Section 8-16-15, tested salt water with a show of oil at 2,440 feet, and the liner has been set at 2,443 feet; G. J. Child's No. 3 fee, NE W half NE SE, Section 8-16-16, is a rig. Six-inch casing was set at 2,118 feet at Clark & Greer's No. 3 Robinson, Section 6-18-15.

Constant Refining Co.'s No. 6 Burns, Section 31-17-15, is drilling in gas sand at 2,190 feet; Crestline Oil Co.'s No. 1 Elford, Section 34-17-15, is drilling at 2,105 feet; Eason and associates' No. 8 Murphy, Section 15-16-15, is drilling at 450 feet. Arrangements are being made to deepen Federal Petroleum Co.'s No. 9-A Lawton, Section 10-16-19, which was formerly completed the middle of last year flowing 1,500 bbls. from 2,427 feet, and Federal's No. 6-B Lawton, Section 10-16-15, is waiting for standard rig with 500 feet of fluid in the hole from 22 feet of sand, topped at 2,617 feet. Federal's No. 3 H. B. Murphy, Section 15-16-15, is drilling at 2,460 feet.

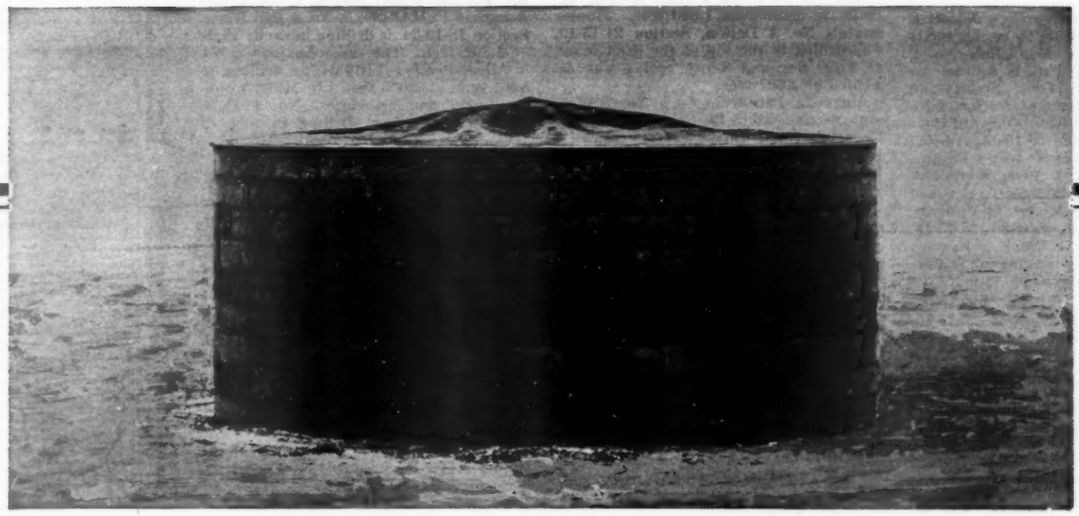
Gaughan & Sifford's No. 1 Park, NE NW SW, Section 28-16-16, is a derrick. A short string of 4½-inch casing was cemented at 2,681 feet at Gulf Refining Co.'s No. 17 Alphin, Section 2-16-15. Gulf's No. 2 Clawson, Section 14-16-15, is drilling at 2,628 feet and No. 3 McMullen, Section 1-16-16, is drilling at 2,710 feet. W. H. Harper's No. 1 Mathews, Section 34-16-16, is shut down at 2,081 feet waiting orders. Hatfield and associates' No. 2 Ennis, Section 23-17-16, is in 30 feet of sand topped at 2,152 feet with a show of oil. Howell & Knowles' No. 2 Springer, Section 36-17-16, is coring at 2,518 feet. Humble Oil and Refining Co.'s No. 6-B Flenniken, Section 9-16-15, is to be deepened. Arrangements are being made to test 12 feet of broken sand topped at 2,635 feet at Humble's No. 2-B Lawton, Section 7-16-15. H. L. Hunt's No. 1 Murphy, Section 33-16-16, is waiting for standard rig at 2,160 feet, and Hunts' No. 2 Swilley, Section 28-16-16, is a rig. Six-inch casing was set at 2,549 feet at Imperial's No. 12 McClanahan, Section 6-16-15, and 4-inch casing was set at 2,548 feet at No. 8 McClanahan, same section.

Lion Oil & Refining Co.'s No. 1 Coombs, Section 25-18-16, is drilling at 1.300 feet and No. 8 Flenniken, Section 10-16-15, is coring at 2,457 feet. Magnolia's No. 4 Tatum, Section 7-16-15, is waiting for 6-inch to set at 2,603 feet, and surface casing was set at 252 feet at No. 5 Tatum, same section. A rig is up for Magnolia's No. 1 Childs, Section 8-16-16. Cement is being drilled out at 2,617 feet at Mazda Oil Corp.'s No. 6-R Lawton, Section 10-16-15. Moorefield and associates' No. 1 Edwards, Section 2-19-18, is being cored at 2,669 feet. Four and one-half inch casing was cemented at 2,529 feet at Peer Oil Co.'s No. 1 Cook, Section 17-16-15, and Peer's No. 5 Palmer, Section 9-16-15, is being cored at 2,470 feet. Six-inch casing was set at 2,006 feet at Leo P. Pukruls' No. 2 Smith, Section 17-16-15.

A. H. Ramage is fishing for the drilling stem at 2,435 feet at No. 6-C Lawton, Section 10-16-15. Arrangements are being made to deepen C. L. Saxon's No. 1-B Saxon, Section 9-16-16, which was completed in 1923 pumping 25 bbls. at 2,075 feet. With 1,900 feet of fluid in the hole from 4 feet of sand topped at 2,569 feet, Sinclair Oil & Gas Co.'s No. 8 Flannigan, Section 6-16-15, is waiting for a standard rig. Standard Oil Co.'s No. 12 McClanahan, Section 6-16-15, is drilling in rock at 2,645 feet. Sun Oil Co.'s No. 9 Brown, Section 8-18-15, is drilling at 2,178 feet. Weiss & Simmons' No. 1 McElroy, Section 4-16-16, cored sandy shale at 2,020 feet and is waiting orders.

Ouachita County

J. B. Smith's No. 1 Smith, Section 13-15-17, was completed at 2,225 feet, pumping 10 bbls. of fluid of which 75 per cent is salt water. Standard Oil Co.'s No. 8-B Murphy, Section 29-15-15, is flowing 200 bbls. from 18 feet of sand, topped at 2,603 feet. Buffalo Oil Co.'s No. 2 Davis, Section 22-15-19, is pumping 300 bbls. of fluid 50 per cent salt water from sand at 1,552-56 feet. J. D. Reynolds' No. 1 Sawyer, Section 22-15-19, is making 18,000,000 feet of gas and spraying a little



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salt water and oil and is in sand at 1,532-33½ feet.

Humble Oil & Refining Co.'s No. 11-B Arnold, Section 26-16-16, is coring sandy shale at 2,676 feet. Magnolia's No. 2 Murphy, Section 30-15-16, is waiting for cement to set at 2,252 feet. Neibert and associates' No. 1 Higgins, Section 4-13-17, is drilling at 950 feet. Ohio Oil Co.'s No. 6 Goodwin, Section 29-15-15, is being bailed to test at 2,578-89 feet. Phillips Petroleum Co.'s No. 1 Tate, Section 9-14-17, is drilling at 800 feet. Six-inch casing was set at 2,620 feet in Pure Oil Co.'s No. 12 Brister, Section 28-15-15. J. D. Reynolds' No. 1 Ratch & Cartier, Section 2-14-18, is drilling at 1,220 feet.

Simms Oil Co.'s No. 11 Hildebrant, Section 28-15-15, is drilling at 1,920 feet, and No. 6 T. Murphy, Section 29-15-15, is drilling at 1,605 feet. Smith Drilling Co.'s No. 3 Shirey, Section 36-15-17, is drilling at 1,320 feet. Sun Oil Co.'s No. 6 Hardin, Section 27-15-16, is spudding. While running casing to 1,635 feet at Vandivers and associates' No. 1 Yarbrough, Section 22-14-17, the 8-inch stuck at 868 feet and the test is shut down waiting orders. Arrangements are being made to deepen Woodley Petroleum Co.'s No. 8 Umsted, Section 4-15-15, which was completed late in 1925 for a 20,000,000-foot gas well at 2,510 feet.

Buffalo Oil Co.'s No. 4 Morgan, Section 22-15-19, is a rig. Six-inch casing was set at 1,479 feet at Gossett and associates' No. 1-A Thompson, Section 22-15-19, and the plug is being drilled. The test cored sand at 1,498 feet. El Dorado Union Oil Co.'s No. 1 Hall, Section 31-15-19, is drilling at 1,650 feet. Hunter estate's No. 1 Dalton, Section 21-15-19, was drilled to the top of the sand found at 1,629 feet and 6-inch casing was cemented at 1,607 feet.

Magnolia Petroleum Co.'s No. 2 Watson, Section 31-15-19, is a rig. J. D. Reynold's No. 1 Davis, Section 22-15-19, is in three feet of sand, topped at 1,513 feet and is waiting for a standard rig.

Nevada County

One of the two completions in Nevada County during the past week was a big gas well and the other was an oil well. Steele and associates' No. 1 Haynie, Section 1-14-21, is making 25,000,000 feet of gas from 28 feet of broken sand, topped at 1,100 feet. Eight-inch casing was set on top of the sand. Smitherman & McDonald's No. 4 C. W. Waters, Section 2-14-21, was completed in sand at 1,183-90 feet for a 100-bbl. pumper.

Humble Oil & Refining Co. has staked location for No. 4 Bodcau, 1,640 feet north and 150 feet west, SE corner Section 10-14-21.

Arkansas Wildcats

In Calhoun County, Southern C. O. P. Co.'s No. 1 Calion Lumber Co., Section 1-16-14, is drilling in lime at 2,420 feet. In Clark County, 6-inch casing was set at 834 feet at Virgil Heath's No. 1 Arnold, Section 12-9-20. In Drew County, McClintock & Goodka's No. 1 Olga, Section 35-13-5, is shut down at 1,940 feet for rig repairs. In Lafayette County, Gulf Refining Co. abandoned location for No. 1-E Red River, Section 10-19-24, and Arkansas Fuel Oil Co.'s No. 4 Red River, Section 18-19-24, is drilling in sandy shale at 1,362 feet. The same company's No. 3 Allen, Section 18-19-24, is drilling in hard sand at 2,065 feet. In Miller County, Lenze and associates' No. 1 Dale, Section 25-15-26, is drilling in rock at 1,875 feet.

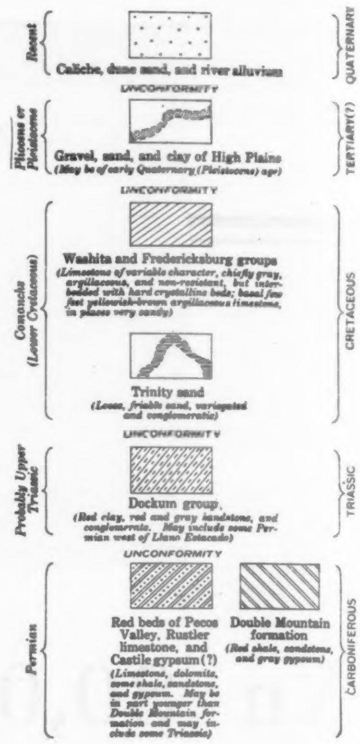
Columbia County

J. E. Crosbie's No. 2 Jones Womack, SE SW SE, Section 36-15-20, set surface casing at 120 feet and cemented 6-inch at 2,209 feet. Gordon and associates' No. 1 Jones, Section 36-15-20, is 10 feet in sand, topped at 2,606 feet and waiting for standard rig. Gordon, Powell & Dickson's No. 2 Jones, SE cor. Section 36-15-20, set surface casing at 43 feet. Haynesville Trust Co.'s No. 1 Wingfield, Section 18-19-19, is drilling in rock at 1,700 feet. Hude & Aarnes' No. 2 Brown, Section 13-15-20, is bailing in an open hole to test broken lime at 3,322 feet.

A Year in Smackover

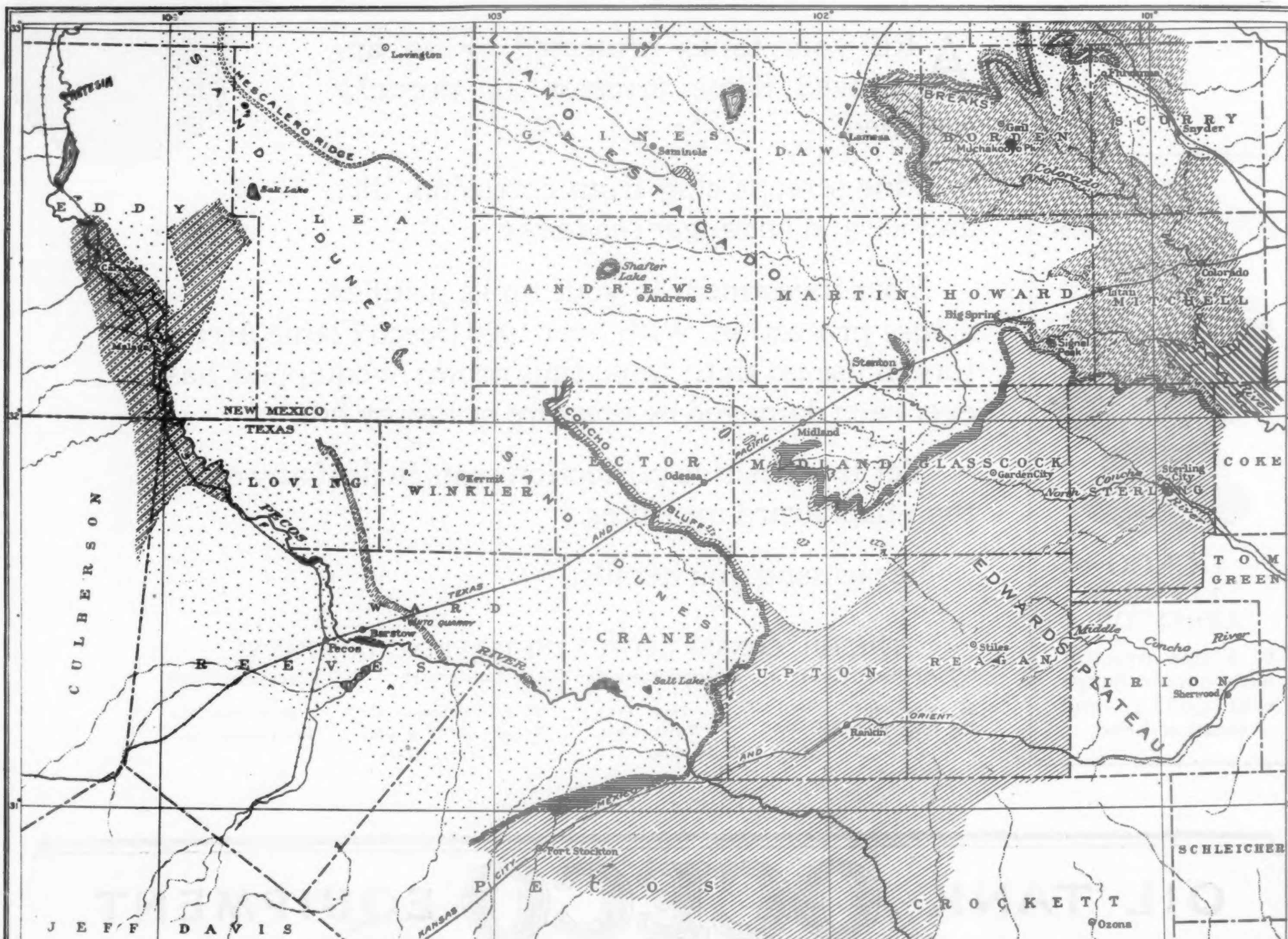
The State of Arkansas in the 12 months ending April 30 produced in the neighborhood of 81,600,000 bbls. of crude. Of this quantity 72,300,000 bbls. was marketed.

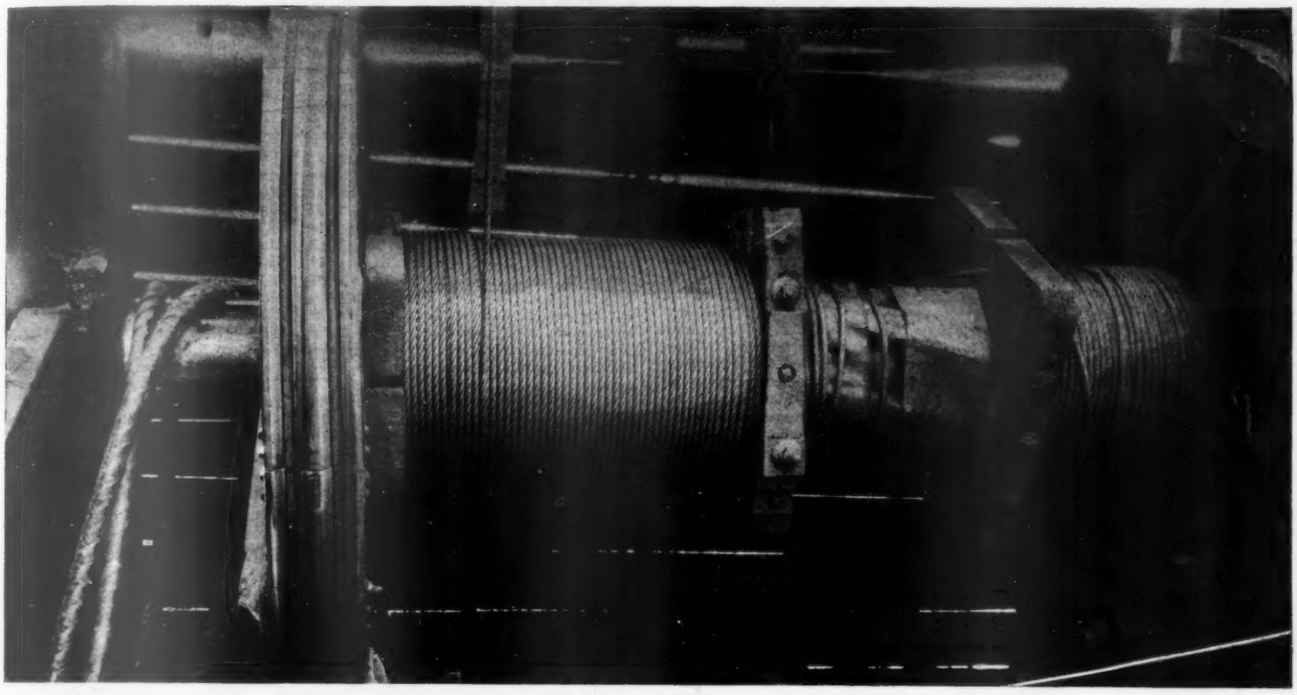
In the Smackover area, where the great bulk of the production originated, the crude oil in storage on April 30, 1925, was 17,012,600 bbls. of good pipeline oil and 20,259,101 bbls. of good and bad oil. April 30, 1926, the stocks of good oil, light and heavy, represented 27,770,-



GEOLOGIC MAP OF A PORTION OF WESTERN TEXAS AND SOUTHEASTERN NEW MEXICO

(From United States Geological Survey)





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444 bbls., while the total stocks, including nonpipeline crude, were 29,582,370 bbls. The stocks of good heavy crude increased over the one-year period by 12,006,702 bbls. and the light crude stocks 183,892 bbls. The mixed (heavy and light, crude stocks increased from 9,102 bbls. to 253,489 bbls., or 244,387 bbls. The nonpipeline oil at the close of April, 1925, amounted to 3,246,501 bbls. while at the close of April this year it was 1,646,023 bbls., indicating that 1,600,478 bbls. had been removed from storage and converted into refinable oil.

The pipeline runs from the heavy oil district of Smackover in April last year were 4,143,583 bbls. and the light oil field 900,773, a total of 5,044,356 bbls. In April this year the heavy oil runs are given as 4,385,444 bbls. and the light oil runs, 504,298 bbls., a total of 4,799,742 bbls. The runs in April a year ago averaged 168,145 bbls., while in April this year they are given as 162,991 bbls. The production in April last year greatly exceeded the runs, while this year they are running all of the oil produced in the field.

Pipeline Runs

The pipeline runs from the Smackover heavy oil district in April, 1926, were as follows:

Smackover Field Pipeline Runs in April (Heavy Oil)

Southern Pipe Line Co.	281,183
American Pet. Co. of Texas	90,722
Crown Central Oil Corp.	40,493
Arkansas Fuel Corp.	11,975
Henry H. Cross Co.	99,354
Crusader P. L. Co.	19,537
Gulf Refining Co.	924,969
Humble O. & R. Co.	160,366
Houston Oil Co. of Texas	55,712
Kettle Creek Ref. Co.	93,135
Lion O. & R. Co.	156,281
Louisiana O. R. Corp.	145,589
McMillan, Fehlman & Oliver, Inc.	43,565
Magna P. L. Co.	67,915
Magnolia Pet. Co.	71,390
The Pure Oil Co.	38,917
Sam M. Richardson Co.	3,023
Roxana Pet. Co.	95,463
Root Refineries, Inc.	253,004
Sun Oil Co.	3,295
Speith Oil & P. L. Co.	58,196
Standard P. L. Co.	999,128
Shreveport-El Dorado P. L. Co.	111,557
Simms Oil Co.	184,268
The Texas P. L. Co.	276,397
Total for month	4,385,444
Daily average	146,181
Daily average in March	139,798

Louann District (Light Oil)

Standard P. L. Co.	80,881
Home Refining Co.	579
Gulf Refining Co. of Louisiana	108,806
Louisiana O. R. Co.	138,842
Texas P. L. Co.	46,370
Shreveport-El Dorado P. L. Co.	71,052
Magnolia Pet. Co.	57,768
Total for month	504,298
Daily average	16,810
Daily average in March	16,606

CANADIAN FIELDS

(Continued from Page 60)

gave considerable trouble. Dalhousie's No. 1 LSD 4, Section 18-20-2w5, is fishing at 3,527 feet.

Another Location

Mid-Valley Oil Co. has located No. 1 in LSD 12, Section 5-20-2w5, a mile southeast of Royalite's No. 4 and close to the earlier Dingman wells, and is now waiting for equipment. This company, which is backed by eastern capital, is planning a series of four tests, and may do some drilling outside the Turner Valley Field, acreage having been secured elsewhere in Alberta. The officers are: President, F. A. Labelle, Hull, Quebec; vice president and general manager, Harold V. O'Reilly, Calgary; field superintendent, William E. Robinson, C. E., Calgary; directors, P. S. McKergow, Montreal, Quebec; D. L. Torney, Ottawa; J. Pharand, Hull, Quebec; George Hunter, Montreal; E. J. Racine, Casselman, Ont.

It is reported that a merger is being negotiated of the El Dorado Oil & Gas Co. of Calgary and the Prairie Natural Gas Co. of Craigmyle, Alta. The Prairie Natural Gas Co., organized some years ago, has developed some shallow gas production near Craigmyle, while the El Dorado has acreage in the Turner Valley Field and in the Moose Mountain and Steveville districts.

New Valley Oil Co., LSD 4, Section 6-21-2w5, has derrick timbers on location and is erecting. New York-Alberta Oil Oils, Ltd., has spotted a test in LSD ning to work on the derrick. Homestake Oils, Ltd., has spotted a test in LSD 5, Section 3-20-3w5, and is planning to spud in about June 15. Officers of the company are: President, Dr. Charles C. Coleman; vice president, S. G. Jamieson; directors, David Anderson and Lloyd Bannerman. British Dominion's No. 1 LSD 4, Section 5-20-2w5, has derrick and camp complete and heavy machinery installed, and is hauling 20-inch and 15½-inch casing to location. Spooner Oils, Ltd., has a derrick under construction just north of Vulcan Oils' No. 1, in the north end of Turner Valley. Clarence Snyder will be in charge of the drilling.

Great West Oil Co.'s No. 1, SE Section 7-20-2w5, is reported drilling below 1,000 feet. On the same section the derrick is up for No. 2, which is waiting for equipment. Cooper-Nanton's No. 1, LSD 2, Section 7-20-2w5, is moving derrick materials to the site and has ordered drilling equipment from Pittsburgh. Interests connected with the Oil Producers Corp. of Montana have arranged to incorporate all their Montana holdings together with Alberta acreage into the Oil Producers Corp. of Canada, to be incorporated under Dominion charter.

In the outlying fields, High River Oils, Ltd., has located a test in the Wilson Lumber Co. yards at High River. New Black Diamond Oil Co.'s No. 1, LSD 1, Section 3-20-3w5, has the derrick up and is waiting for some of the drilling machinery. In the Moose Mountain Field, Cherokee Oil Co.'s No. 1, Section 33-23-5w5, is running casing to below 1,500 feet. The hole is in the top of the Dakota at 1,664 feet and the diamond drill test is reported to show traces of dark heavy oil. Reserve Oils, Ltd., is reported to have spudded in its diamond drill test on the Indian reserve at Morley. The location is within the Indian reservation and about a half mile from the highway leading to Banff Park. The diamond drill outfit will be run double tour. Mount Royal Oil Co. has a location in the center of Section 30-26-5w5, north of the Bow River. Officers of the company are: President, D. P. McDonald; vice president, J. C. Milligan; secretary-treasurer, W. Kent Power. Montana capital is reported to be interested.

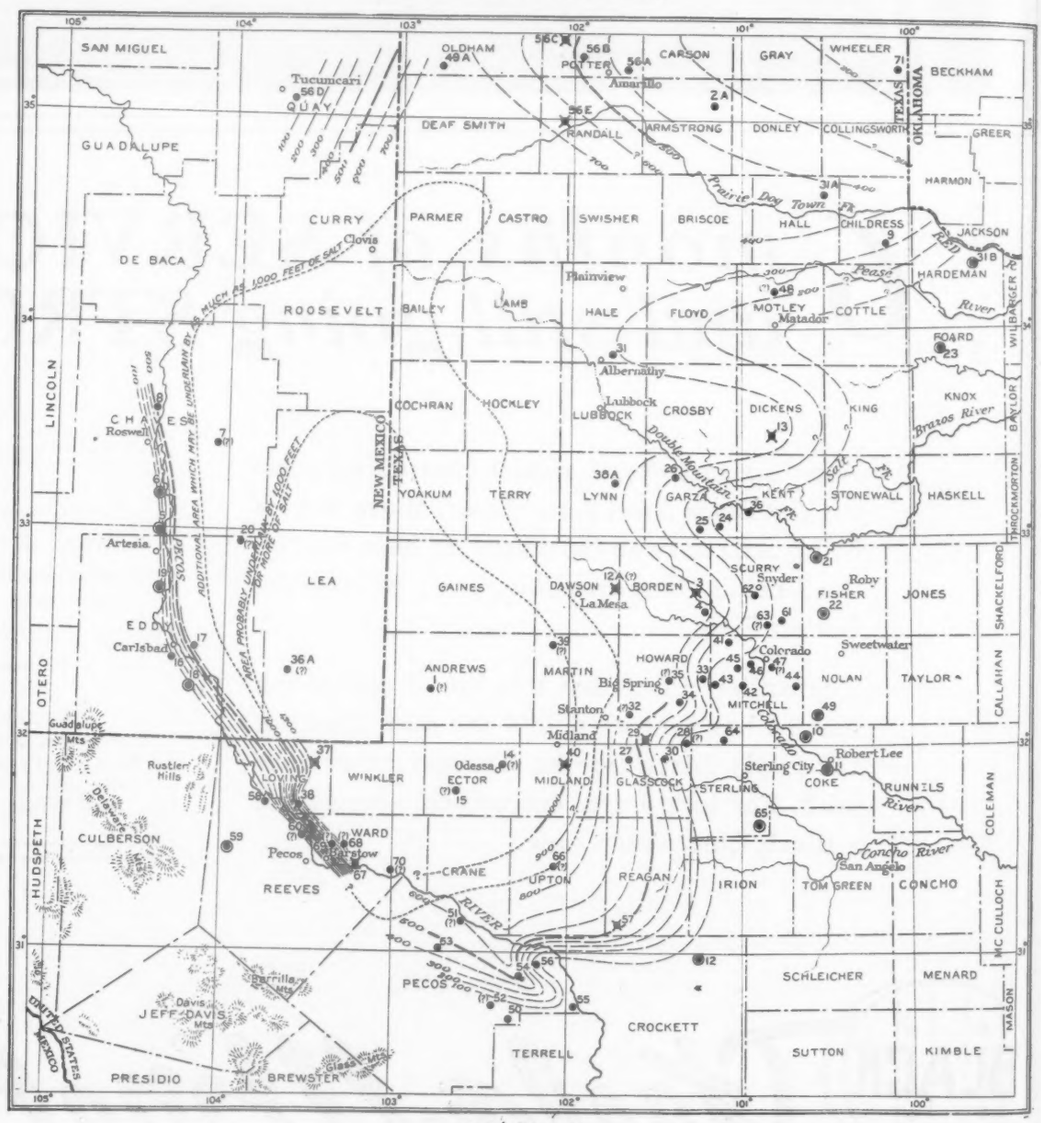
In the Jumping Pound district, 25 miles west of Calgary, Imperial Oil, Ltd.'s No. 1 Bow River, LSD 15, Section 12-25-5w5, is reported down 2,100 feet and fishing for a bailer. In the southern foothills, Imperial Oil, Ltd's Rice Creek test, Section 4-14-2w5, is being got in shape to resume drilling. Part of the Coalspur crew is already at work on the Rice Creek rig, while the remaining men are at Coalspur pulling as much as possible of the casing from the abandoned deep test there. The Rice Creek test is resuming at 4,025 feet with Karl Klentsche in charge of the drilling.

Foremost Field

In the Foremost Field, United Oils, Ltd., is reported drilling at 1,000 feet in its test for gas. East of Coutts, in the Border Field, Imperial Oil, Ltd., Erickson Coulee, LSD 13, Section 8-1-12w4, is reported drilling below 800 feet. On the Quarantine Reserve near Coutts, Urban Oils, Ltd's No. 1 Moodie, Section 4-1-15w4, is reported down 2,800 feet in a hard formation, and fishing for a lost bit. A small flow of gas was met just before the bit was lost, and it is reported that traces of oil have also been encountered. On the Montana side, the Monalta's No. 1, close to Sweetgrass, is reported drilling below 1,300 feet. Queen City-Moore's No. 20, S NW Section 4-34-2w, which caught fire recently, is reported to have been brought under control. Fred Michener, representing a Red Deer, Alta,, syndicate, is locating a test

MAP OF WESTERN TEXAS AND SOUTHEASTERN NEW MEXICO

(From United States Geological Survey)



EXPLANATION

Well in which salt was found

Well in which no salt was reported

Well in which potash was found

Lines showing thickness of salt in feet

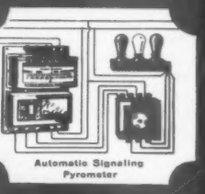
(?) Indicates well which has not penetrated entire salt series or which penetrated uncertain amount of salt

Pyrometers vs. Thermometers

In the Oil Industry

High Resistance Indicating Pyrometer

Continuous Recording Pyrometer


Automatic Signaling Pyrometer

Automatic Control Indicator

IN designing or planning the improvement of practically any part of a modern oil refinery, oil men are repeatedly faced by the question: "Shall I use a PYROMETER or a THERMOMETER as a means of indicating, recording or controlling these temperatures?" Since we manufacture a complete line of thermometers and pyrometers covering every oil refining requirement, we are in a position to give unbiased answers to these questions.

In the past an overwhelming majority of applications called for thermometers. But today thermometers are being displaced by thermo-electric pyrometers in constantly increasing measure. Outstanding among these reasons for pyrometer predominance are:

1. With electric pyrometers the instruments may be located at any desired point, regardless of where the temperature may be taken. Employment of electric pyrometers therefore, make it practicable to group at a central point the temperature-measuring instruments used on a given operation, thus enabling the operator to observe the temperatures at all points without running about, and consequently, with more accuracy and fidelity.

2. The above advantage is further stressed by the fact that with electric pyrometers—unlike all thermometers other than the resistance type—a single pyrometer instrument can be connected through a rotary switch so that the operator, by merely turning a switch and thus connecting and disconnecting various thermocouples in turn, can read the temperatures at any desired number of points.

3. There is no element of an electric pyrometer capable of being easily broken which need be exposed where such breakage might readily occur. Breakage is, on the other hand, a large factor to be contended with in the use of many thermometers offered for oil service.

4. Electric pyrometer indicating, recording or controlling instruments can be located a greater distance from the point where the temperature is taken, than is possible with thermometers.

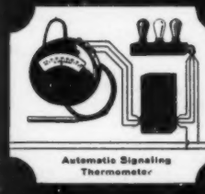
5. Electric pyrometers are more sensitive—respond more quickly to temperature changes—than thermometers suitable for oil work.

Pyrometers or thermometers, Brown field engineers specializing on service to oil refiners will cooperate to supply you with either, to meet specific requirements.

Address: The Brown Instrument Company, 4478 Wayne Avenue, Philadelphia, Pa., or any of our district offices in New York, Boston, Pittsburgh, Cleveland, Columbus, Detroit, Chicago, Indianapolis, Birmingham, St. Louis, Tulsa, Houston, El Paso, Los Angeles, San Francisco, Denver, Salt Lake City and Montreal.

Long Distance Indicating Thermometer

Long Distance Recording Thermometer


Automatic Signaling Thermometer

Recording Control Thermometer

BROWN

PYROMETERS : : THERMOMETERS

for oil on the Milk River Dome, between the town of Milk River and the Quarantine Reserve.

In Medicine Hat Field, the Roth Syndicate's No. 1 deep test in the city limits has set 6¼-inch casing and resumed drilling at 2,075 feet with water in the hole.

In the Irma-Wainwright Field, east of Edmonton, Edmonton-Wainwright Oils' No. 1, LSD 4, Section 29-45-6w4, is reported to have 2,000 feet of oil in the hole, and is flowing by heads. The company is reported to have contracted with Alberta Refineries, Ltd., at Edmonton to handle the production, deliveries to commence June 1. The rotary outfit at Edmonton-Wainwright's No. 1 is being dismantled to move to the Emerald Oils, Ltd., location in LSD 8, Section 30-45-6w4, where a derrick is up for a test.

The derrick and buildings of the Interior Oil Co. on Section 36-44-7w4 were completely destroyed by fire some days ago, with some damage to drilling equipment. The test, which was shut down at 1,200 feet during the winter, had just been got in shape to resume. The site is now being cleared and a new derrick erected. Loss will be about $5,000.

Baxter-Wainwright Oils, Ltd., have spotted a test in LSD 14, Section 30-45-6w4, being part of 200 acres to be developed under a royalty agreement with the Baxter Lake Oil Co. British-Wainwright Oil Co., which had a location on Section 22-45-6w4 with derrick up, is reported to have shifted to Section 30-45-6w4, for its first test. Western Consolidated's No. 1, LSD 7, Section 20-45-6w4, has received casing and is resuming work at 1,400 feet. Fabyan Petroleums, Ltd., has a derrick up in the Fabyan end of the field.

Unity Valley Oil Co. is reported shipping a rig to a location east of Wainwright. A combination rotary and standard outfit is being used for this test. On the Saskatchewan end of the Ribstone-Blackfoot anticline, the Oxville Oil, Gas & Development Co., composed of farmers in the Oxville district and some Lloydminster, Sask., business men, hase secured acreage and may drill a test.

In northern Alberta, International Oils, Inc., of New York, controlling 36,000 acres of oil leases on the eastern border of Lesser Slave Lake has No. 1 test rigged and will spud in early next week. Frank P. Ross of New York is general manager and A. P. Phillips drilling superintendent. International Oils, Inc., is planning to put down a series of five wells to test its holdings. It is thought the structure may show production around 2,000 feet.

The Dominion Government is arranging to take further samples of the Athabaska tar sands for testing purposes, and to continue the investigations carried on in recent years by Dr. S. C. Ells of the Geological Survey.

ARTESIA, NEW MEXICO

(Continued from Page 52)

was completed two weeks ago, is making 50 bbls. daily.

The Ohio Oil Co. is spudding in its No. 1 in Socorro County near the Valencia County line. This test is 65 miles southwest of Albuqureque and is located in Section 32, Township 4n, Range 6w. This company has a number of producing wells in the Artesia Field but this is the first test to be made by them in the Socorro section. This well will be a deep test, production being looked for in the Pennsylvania sand at around 3,000 feet. This is the sixth test to be started in this area.

Southeast of Las Vegas, the Marland Oil Co. is carrying 5 3/16-inch casing at a depth of 4,000 feet in its No. 1 Bell, located in Section 3-13-29.

Eddy County

Compton's No. 2, Mann permit, Section 3-18-27, rigging up. Compton, Hasenfuss and Lewellyn's No. 1, SW SW, Section 16-18-27, fishing for bit at 1,675 feet. Decum Development Co.'s No. 1 Vandagriff, NE cor. SE, Section 5-17-28, temporarily shut down. Dome Oil Co.'s No. 6, SE cor. NE, Section 21-18-28, abandoned at 2,200 feet, salt water. Empire Gas & Fuel Co., SE cor. SW SW, Section 35-17-27, moving tools. Flynn, Welch and Yates' No. 39, SE, Section 21-18-28, drilling at 2,500 feet; No. 40, SE, Section 29-18-28, on production; No. 41, SW cor. NW SW, Section 3-18-28, cleaning out after shot; No. 42, NE cor. NW SW, Section 3-18-28, cleaning out after shot; No. 43, SE cor. NE, Section 28-18-28, drilling at 2,350 feet; No. 44, NE NW, Section 9-18-28, on production; No. 45, NE SE, Section 21-18-28, drilling below 1,800 feet; No. 2 Keyes, Section 21-18-28, drilling below 300 feet; No. 46, Section 28-18-28, drilling below 500 feet; No. 47, Section 28-18-28, rigging up; No. 48, Section 21-18-28, location. Fletcher Oil Co.'s No. 1, SW, Section 5-19-28, being plugged back from 2,702 to 1,950 feet, will be shot. Frontier Petroleum Co.'s No. 2 McQuigg, Section 4-18-28, on production. Hasenfuss-Donley's No. 1, NE NE, Section 13-18-27, drilling below 1,950 feet. Hamilton Petroleum Co.'s No. 1 Billings, Section 12-19-26, spudding in. Mesa Oil Co.'s No. 1, Section 4-19-28, fishing. Navajo Oil Co.'s Section 28-17-28, cleaning out after shot. Ohio Oil Co.'s No. 5 Toomie Allen, NE SE, Section 28-18-28, drilling at 2,585 feet; No. 9 New State, SE SW SE, Section 4-18-28, plugging back to 2,250 feet, total depth 4,035 feet. Picher Oil & Gas Corp.'s No. 3, Section 12-18-27, location. Swartz, Compton and Eaton's No. 1, Brainard permit, NE SW, Section 5-18-27, drilling below 1,600 feet. Twin Lakes' No. 8, NW cor. SW, Section 28-18-28, drilling at 2,660 feet. The Texas Company's No. 5, George Bobb permit, center of Section 17-17-28, drilling below 1,250 feet. Wade & Bujac's No. 1 Goodale permit, NW NW, Section 19-18-29, drilling at 1,675 feet. Wooley & Jones' No. 1, Beeson, SE cor. Section 33-17-30, drilling below 1,850 feet.

Chaves County

Arkansas Gas & Fuel Co.'s No. 1, Manning Dome, SE cor. Section 14-15-17, pulling casing Colorado Gas & Fuel Co.'s No. 1, NW SW, Section 16-8-27, drilling at 5,000 feet. D. C. Devito and others' No. 1, southwest quarter of Section 24-11-26, rigging up. Shaeffer Oil Co.'s No. 1, Wilson permit, Section 30-10-26, abandoned. White Oil Co.'s No. 1 Franks, SW SW, Section 25-10-26, abandoned. New State Petroleum Co., SW NE, Section 27-10-26, abandoned. Neal and others' No. 1, Section 25-9-25, drilling at 1,600 feet. Rogers and others' No. 1, NE quarter of Section 15-11-26, testing at 1,200 feet.

Lea County

J. S. Covert's No. 1, Section 15-21-33, rigging up. Inglefield and others, Section 4-17-34, rigging up. Maljamar Oil & Gas Corp.'s No. 1, NE quarter of Section 21-17-32, fishing; No. 1 Grace Mitchell permit, SW cor. Section 5-17-32, erecting standard rig; No. 1, Beardsley permit, NE cor. Section 15-17-32, drilling at 150 feet; No. 1, Pearsall permit, NE cor. Section 33-17-32, moving tools; No. 1, William Mitchell permit, SW cor. Section 17-17-32, drilling at 200 feet; No. 1, Miller permit, NW quarter, Section 23-17-32, drilling below 375 feet. Shugart and others' No. 1, SE SW, Section 1-17-31, locafion.

SOUTHWEST TEXAS

(Continued from Page 62)

Co. which abandoned one test on the Betnett ranch in Survey 37 is preparing to drill another and is moving rig to the Dinn ranch to drill 200 feet from the south and east lines of the southwest quarter of the northeast quarter of Survey 666.

Jim Hogg County

Kitselman—St. Albans Corp. last week completed No. 30 Holbein, which is the fourth oil well in the new district on the Holbien ranch, in Jim Hogg County, a little over 1 mile northeast of the nearest oil production in the Henne, Winch & Fariss Field. It is located in the northwest corner of Block 8, Section 16, of the Holbien land and is a quarter of a mile south of No. 27, which was the first oil producer completed in that territory. No. 30 is shut in but is estimated at 300 bbls. Gassers between this area and the Henne, Winch & Fariss Pool lead to the idea that it is a separate pool. It could be an extenson of the older pool. No. 31, completed last week, on Block 22 of Survey 11, is a 35,000,000-foot gas well.

Max Buffum, who drilled a dry hole on Block 28 of Section 15, of the Holbien land in the early days of the Henne, Winch & Fariss Pool on a location that is now about midway between the old and the new oil production, is getting ready to drill another test. It is barely possible that the rotary mudded off his production. With oil and gas wells all around him he will make another test and the results may help to tell whether the oil field is to be extended to connect up with Kitselman-St. Albans well or whether the latter is a separate pool.

Kitselman-St. Albans is drilling at 1,600 feet in No. 32, at 1,480 feet in No. 33 and is down a good piece on No. 34 and spudded in on No. 3 T. P. Holbien. Producing depth of all the wells is about 2,150 feet. Crown Central is drilling at 1,000 feet in its No. 1 Holbien, on Block 23 of Section 12. O. W. Killam is rigging up on Block 4 of Survey 256 for his No. 2 Mann-Hinnant, a little to the west of the Holbien block. No. 1 was a big gas well.

Medina County

Ina Oil Co. has a 40-foot sand saturated with oil in its wildcat test on Survey 535, in Medina County, under a rock at 320 feet and is setting 10-inch to make a test. The well was to have been an Edwards lime test. It will be completed and brought in where it is. It is 8 miles due south of Hondo, the county seat, and is 5 miles west of the Ina Field. It is 4 miles south and a little east of No. 1 Taylor, brought in by the Medina Oil Co. at 356 feet and which pumped 100 bbls. of oil a day, but which has been surrounded by other tests, only two of which got a little oil. The Taylor well seems to be producing from a crevice. The Ina Oil Co.'s test, which is on the Hoffman farm, in the northwest corner of Survey 535, located 150 feet from the north and west lines, has a sand from 320 to 360 feet and the drill stopped in the sand. The showing was too good to mud off and the well will be completed. It looks like another possible shallow pool for Medina and seems to confirm what oil men have been saying that a string of shallow pools would be developed from east to west through the center of the south half of Medina County. The Somerset Pool, in Bexar and Atascosa Counties, is 25 miles due east of the Ina Pool. Between these at Noonan, a little to the north, there is a little pool that has never been developed. Production thus far has proved small but it helps prove the theory of a string of pools.

Henderson & Holden, who last week completed their second gas well in Medina County, 1 mile south of the Ina Field, have moved over to start the third test. In the Ina Field, Golden West Oil Co.'s No. 5 Schmidt has set casing at 872 feet and will be drilled in this week. In drilling it a 10-foot sand was penetrated at 335 feet and in the next test drilled this will be tested out. It is the first time it has been encountered in the field. It covered the slush pit with oil and looks like it has possibilities. In the field 4 miles south of Hondo a few rigs are running and there have been no completions. Among the wildcat tests Alamo Drilling Co.'s No. 1 Bendele and Hudson & Johnson's No. 2 Christilles, each a short distance west of Noonan, are testing the Edwards lime. Ina Oil Co., on the Charles Finger, is drilling below 200 feet. Eastham & Tarver, on the No. 1 Howard, in Survey 91, 1 mile east of the Henderson & Holden wells, is drilling. Plateau Oil Co., in No. 1 Carle (formerly reported as No. 1 Harrison) is drilling at about 1,900 feet and preparing to core. A core in the Del Rio at 1,825 feet carried an odor of oil and the top of the Buda, cored at 1,835 feet, showed the formation stained with oil and with a strong odor. Schermerhorn Oil Co.'s No. 1 Medina Irrigation Co. has a showing of oil at 900 feet. J. R. McCadlin's No. 1 Thompson, west of Devine, after completing a water well has resumed drilling and is down about 400 feet on an Edwards lime test. Gibson Oil Corp.'s No. 1 Faesler is drilling at 950 feet in Survey 808.

McMullen County

George M. Ball's No. 1 Kuykendall, in McMullen County, with derrick up and rig on the tract at Fowlerton, is waiting for the roads to dry so that the rig can be moved out. Moody-Seagraves has taken a 90-day drilling contract on a block of several thousand acres out of the Franklin ranch, in northern McMullen County, the block adpoining on the west and south the block of Eugene Sights, on which he has one well down to 1,630 feet and about to start another. The Sights block has been taken over by T. H. Poole and a major interest will probably complete the tests. Coyle-Concord Oil Co. has closed a contract on the Mat Martin ranch, in McMullen, to the south of the blocks just mentioned and is preparing to drill some wildcat tests. Moody-Seagraves' No. 4 Jacobs, 4 miles northwest of the Calliham shallow field, is fishing at 1,900 feet.

Starr County

O. W. Killam has resumed drilling on No. 1 Guerra, in Survey 43 in Starr County, after considerable trouble arranging for water and is now at 1,200 feet. Dauchy & Bryant are standing at 1,900 feet in No. 1 Kelsey, on Survey 125.

Zavala County

Continental Oil Co.'s No. 1 Pryor, in Zavala County, has a flow of hot sulphur water from a cavity at 3,300 feet, the flow going 6 to 7 feet over the top of the casing. Six and five-eighths will be lowered to shut out water and the test drilled deeper. A 17-foot sand stained with oil and logged in the Graves well off to the northwest and supposed to be in a syncline should be found in the Continental well at 3,350 to 3,500 feet. D. H. Byrd-Old Dominion's No. 1 Pryor, in the pecan pasture in Zavala, is standing at 2,505 feet, the contract depth, having been reached but it may be deepened to 2,700 feet, at which depth it should top the Austin chalk. One, only, of several sands logged in the Old Century well to the south of this test has been encountered in this and it had only a showing of oil.

Webb County

In the territory between the Edgington, or Aviator Pool, on the north, in Webb County, and the old Mirando Valley Pool, in the northern part of Zapata County, 5 miles south, there are several new tests. Crown Central-Rydal have started to drill in the northeast corner of the west half of Block 43. Associated has spudded in on Block 44; Simms is drilling below 1,000 feet in No. 3, on Block 10 of Survey 835; Staley & Wynne are drilling in the southeast corner of the west half of Block 18; Rydal-Crown Central have spudded in on the southwest corner of the east half of Block 16; Duke Phillips & Morgan are rigging up on Block 46; George Echols has made a location on Block 53. Stubbe & Stubbe, of Corsicana, have a derrick up in the northwest corner of Block 19. Ruthada Oil Co. (Frank Ketch) is rigging up in the northwest corner of the east half of Block 18.

The most notable completion of the week in this district is the Three Rivers Oil Co.'s No. 5 Puig, in Block 76 of the Edgington subdivision of the Puig ranch, which came in the past week swabbing at the rate of 1,000 bbls. a day at a depth of 1,735 feet. The Ball well, on Block 13 of the Bruni land, that extended the field two weeks ago, is about 2,000 feet east of this test and 300 feet south. Gibson Oil Co., in the northwest corner of Block 13, is drilling at 800 feet on the first of its tests, which is a south offset to the Three Rivers Oil Co.'s No. 4.

In the Carolina-Texas gas field in Webb County, subscriptions to the amount of $10,000 had been raised for the purpose of closing in the Johnson & DeTray wild gasser that has been running wild since January 26 of this year. The proposition fell through for the time being, however, due to disagreement. The

money was subscribed by operators owning the leases in the district that were likely to be damaged by the condition of the well. The well caught fire a week ago and is burning. It is located on Survey 1012, a little to the southwest of the producing gas wells.

Associated Oil Co. is moving in tools to drill its No. 2-A Webster, a replacement well, on Survey 684 of the Carolina-Texas district. U. S. Gas & Oil is waiting for water in No. 1 Benavides, on Survey 679. J. H. Winch, on Block 12 of Survey 336, is drilling at 1,800 feet. D. C. Smith, in the old Reiser gas area, has a location on Block 19 of Survey 1618. Sterling and others are rigging up on Survey 51, a few miles southwest of the Carolina-Texas and O. W. Killam is rigging up on Survey 52, adjoining it on the east.

Bastrop County

Neal A. Nelson of Ponca City, Okla., and associates are rigging up on the Arthur Naumann farm a few miles south of Smithville in Bastrop County for a wildcat test. One new test, the Mahone & Wilford test, to be drilled by Cranfill & Reynolds, has been started the past week in northern Bastrop County, east of Elgin, on the Dunk farm, and another is soon to be started by L. J. Dodwell on his block of leases nearer Elgin. The Mahone & Wilford test is in the Joseph Black Survey No. 45 on the D. B. Dunk farm, 150 feet from the north and west lines. Andrews Petroleum Co. recently completed at 3,026 feet No. 1 Brundage on the L. J. Dodwell block of leases. It got repeated showings of oil in little streaks of Serpentine and had an odor of oil in the top of the Edwards lime. The new test will be about 1 mile to the southeast of the first test and Mahone & Wilford's test is another mile southeast of it. The Alexander-Lyles test in southwestern Bastrop County on Cedar Creek near the old Dixie Oil Co. test on the Frank Litton farm is in the top of the Edwards lime at 2,360 feet and with an odor of sulphur. It should be completed in a few days. Leases and royalties moved at a high figure around that well which is being drilled by Cranfill & Reynolds. The old Dixie well which got some showings of oil in the Austin chalk is now seeping a stream as big as a lead pencil and geology as shown by other tests has convinced operators there is a structure that should carry oil. It is likely that other tests will be financed in time. A little farther to the southwest Reiter-Foster who completed and abandoned No. 1 Watts April 23 as dry are preparing to drill a test on the Burney farm in that same general part of the county and Johnson Brothers of San Antonio who have been standing in No. 1 Trigg in southwestern Bastrop County are about to resume drilling.

Bee County

Benedum & Trees' No. 1 Goree is drilling at 738 feet near Mineral in northwestern Bee County. W. G. Clark is drilling below 1,000 feet in Scott No. 2 north of Beeville. W. E. Clark is arranging to drill a second wildcat on the Welder land east of Beeville.

Bexar County

Marland Oil Co.'s No. 1 Mihalski in eastern Bexar County, a mile north of St. Hedwig, is in the top of the Edwards at 1,650 feet and has hit it much higher than anticipated. The Austin chalk and other members above the Edwards thinned out and it is feared it may be getting the Edwards too high. A few miles south of this Tidal Oil Co. has a derrick and is nearly ready to spud in on the Cantu land where R. M. Bleakie nearly a year ago completed one test to 1,430 feet, estimated to be good for 12 bbls. a day of high gravity oil. The well has been standing since, after being completed. Tidal will seek to develop the 1,430-foot production and the first location is in the northeast corner of the Cantu land, a mile south of Adkins. W. L. McClanahan is drilling at 1,100 feet in his No. 2 Sodrok, a mile to the east of Tidal's test. McClanahan has completed several producers to 650 feet making 3 bbls. and is attempting to develop deeper production. Humble Oil & Refining Co. spudded in a few days ago in the No. 1 Yturri which is about 1 mile east of its Minna Coreth, drilled last year on a big block of acreage and which resulted in the first step on the Minnie Coreth being a small gasser and the other a sulphur water well in the Edwards. Humble has a big block of leases covering a strip several miles long a little south of San Antonio and this is in the eastern part of its block. Stieren and Storey are planning to drill on the Cover tract a little to the east of Humble. George E. Ginter at Southton has completed fishing on the deep test on the Cotton Mill land at 1,850 feet and drilled to 2,000 feet and abandoned the test. Jonray Oil Co. at Southton tested at 650 feet in No. 1 Sultenfuss No. 1 and it failed to respond. Allowed to stand it is seeping in a little oil and will be further tested. Derrick and rig are being moved in for the second test. A shallow 650-foot field is being developed at Southton, 7 miles south of the center of San Antonio, of high gravity oil, wells making around 8 bbls. a day and total pipeline runs from the field now amounting to about 400 bbls. per day from a total of about 80 wells. East of the Southton Field, and the Humble test on the Yturri, Storey and Stieren are rigging up on the W. J. Cover tract in the M. Gortari Survey No. 5, the location being 1,900 feet south of the New Sulphur Springs road and 150 feet west of the Rollins road and it will be an Edwards lime test.

The McClure well (Utah Texas) on the Ivan Vick land, a few miles south of Southton, cored the top of the Edwards lime late last week at 2,800 feet and 7 inches (steel tape measure) from the top of the rotary table and 2,796 feet from the lip of the hole. The Edwards is hard and compact at that point and only eight inches was made in seven hours. It thus forms a good caprock and if the Edwards should be porous below there is every opportunity and chance of this test making a well and opening a new field in the Edwards. Scouts are sitting on the well all day long and also on the Marland well though the Marland is not looking quite so good as it did for a time.

In the New Southton Field, 5 miles south of San Antonio A. G. Kiefer is now completing his fifth producer, his lease lying immediately north of the juncture of the San Antonio River and the Salado Creek. The Ren-Tex Co. has 27 producers on the Yturri lease on the west side of the San Antonio River. On the east side of the San Antonio River are the 5 wells of Kiefer, 14 on the Janszen lease of Andrews and Kerr, 17 of the Big States Oil Co., 20 of Andrews & Kerr on the Cotton Mill land, 5 of Ginter and Lange on the Cotton Mill land. Kiefer's No. 4 well is pumping 11 bbls. daily and is one of about the best in the sand that runs from 615 to 650 feet. There is a 720-foot sand that is producing in about the same volume in one well and in the deeper test just abandoned by Ginter & Lange on the Cotton Mill land there sand a sand at 885 feet that is believed will make much better production but has not been tested out. Production in the field is from formations above the Austin chalk.

Frio County

Frio Petroleum Co., at 500 feet in Frio County is drilling in lignite.

Fayette County

Red Bank Oil Co. has abandoned its test north of Flatonia in Fayette County at 3,012 feet and will release its black

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of 4,000 acres at that place. O. W. Killam, north of Schulenberg, is down 700 feet in his No. 2 Kroether, which is a replacement wildcat to No. 1, which was lost when a storm blew the derrick down and 1,800 feet of drill stem dropped into the hole.

Guadalupe County

J. M. Davis and others' No. 1 Schultze at 1,215 feet last Wednesday topped a lime formation which was cored and drillers identified as Austin chalk. The well is immediately south of the New Berlin and in what is known as the New Berlin structure. Payne & Bond at 1,274 feet last week were waiting for casing to test a formation thought by some to be Serpentine but have resumed drilling. The Texas Co.'s No. 1 Glenwinkle south of Kingsbury has abandoned its test in the top of the Edwards dry.

Jim Wells County

Benedum & Trees are drilling at 1,800 feet in No. 1 Gallagher, a wildcat in Jim Wells County south of Sandia.

Karnes County

Earl B. Reynolds is assembling a crew to abandon No. 1 Butler at Runge and to rig up on No. 2 which is 1,000 feet or more south.

LaSalle County

DeLange, Eiser Development Co. in the southeast corner of LaSalle County on the Dobie ranch owned in fee is drilling at about 800 feet.

Lee County

Culver and others who lost a hole at about 1,800 feet recently in western Lee County, near the Bastrop County line, between Giddings and Paige, have moved over 50 feet and are preparing to start a replacement well.

Live Oak

George B. Pickett is shut down on No. 2 George West and has moved farther north for No. 3 test. Some interesting geology is being developed in these tests. Neither No. 1 or No. 2 is being abandoned.

Nueces County

The Texas Company has abandoned at 4,503 feet its test in Nueces County south of Nueces Bay. Down to 3,500 feet it was mostly shale and dry. Below that it got better formation but dry. Across the Bay to the north at White Point in San Patricio County Houston Gulf Gas Co. is drilling at 3,307 feet in a sandy shale and John Sigmund at Aransas Pass is shut down at 3,240 feet on account of heavy rains which put the ground where he is drilling under water. At 3,240 feet the drill was in tough gumbo after going through 16 feet of hard rock.

Refugio County

Eight wells are being drilled in the Refugio gas field by the Houston Gulf Gas Co. Houston Oil Co. has completed its first dry hole on the Rook land in the Refugio gas field and has completed a new well.

Travis County

Gulf Production Co. has abandoned No. 1 Carlson in Travis County at 1,120 feet. It got a little Serpentine and a little trace of oil. It is in the northeastern corner of Travis where the Gulf Co. has drilled three wells and the Humble Co. four, all getting a little Serpentine but failing to make wells.

Wilson County

Grayburg Oil Co. has rigged up on the A. W. Irwin test in Wilson County near the Atascosa and Bexar County lines. Gibson Oil Corp. is rigged up on the test near LaBatt on the Southern Pacific railroad in Wilson County.

MEXICAN FIELDS

(Continued from Page 58)

mented 8-inch in gray lime around 1,200 feet. Transcontinental Petroleum Co.'s operations in Lot 54 Cacalilao: No. 247 is in gray shale at 675 feet; No. 262 is in shale at 375 feet; No. 270 is in gray lime at 1,715 feet, and No. 275 is a derrick. In the Panuco sector, Transcontinental's operations follow: No. H-6 Etienne has spudded; No. 2, Lot 1, Tanchicuin is in shale at 875 feet; No. 3, Lot 1, same, cemented 8-inch in gray lime at 1,350 feet; No. 1, Lot 13, is in gray shale at 875 feet; No. 25 Barbarena is in gray lime at 1,280 feet; No. 37 is in hard gray shale at 900 feet, and No. 14 Ojital cemented 12½-inch in gray shale at 600 feet. Tampascos Oil Co.'s No. 13 Robles is in hard gray shale at 1,040 feet, and No. 18-A Robles is in shale around 200 feet. Cia. Explotadora Riquezas Naturales' No. 1 Buena Vista is in gray lime around 1,500 feet, and No. 4, same, cemented 8-inch in shells at 1,440 feet.

South Fields

In the south fields, Huasteca Petroleum Co.'s operations follow: No. 79 Cerro Azul is in brown shale at 1,480 feet, and locations are being cleared for five more tests. In Tierra Blanca, Huasteca's No. 60 is in Tamasopa at 2,146 feet; No. 62 is in brown shale at 1,165 feet; No. 67 is drilled 2,150 feet in gray and brown lime; No. 68 is in hard gray shale and gravel at 2,030 feet; No. 69 is spudding, and three derricks are up and five more locations are being cleared. Mexican Eagle Oil Co.'s No. 18 San Geronimo cemented 8-inch casing in shells at 2,020 feet; No. 29 Cerro Veijo is waiting cable tools at 2,220 feet, gray lime; No. 43 cemented 8-inch casing at 2,061 feet in gray lime, and No. 11, Lot 148 Amatlan is fishing a bit at 2,110 feet, in shells. Agwi Companies' No. 41 Laguna de Tamiahua, is running 12½-inch in gray shale at 1,507 feet. Cosmos Oil Co.'s No. 131, Lot 16, Zacamixtle is in gray shale at 1,910 feet. Cia. Pet. Financiera, No. 29 Chiconcillo is in gray shale at 2,185 feet.

Northern Miscellany

In the miscellaneous northern group consider Ebano. In the Ebano district Mexican Petroleum Co.'s operations in the Chijol sector follow: No. 52 is in white lime at 2,280 feet; No. 53 is showing 800 bbls. in gray lime at 1,652 feet; Nos. 54 and 55 are each in hard gray limes at 1,620 and 1,766 feet respectively; No. 58 is in blue shale at 665 feet. In its La Dicha sector, the drilling follows: No. 71 is in gray lime at 1,168 feet; No. 73 is in a similar formation at 2,110 feet; No. 80 is in brown lime at 1,875 feet; No. 99 cemented 8-inch in gray lime at 1,170 feet; No. 100 is in gray lime at 1,400 feet; No. 101 is in the same formation at 1,260 feet; Nos. 104 and 106 are each in gray shale at 920 and 750 feet respectively. In the Silva, No. 6 is in blue lime at 1,390 feet; No. 7 is in blue shale and shells at 1,150 feet. In the Midway No. 23 is in gray lime with a showing of oil and gas at 1,820 feet, and derricks are up over two more locations. In the San Pedro, No. 20 is in the white lime at 2,065 feet; No. 21 is in gray lime at 1,610 feet, and No. 22 is a derrick. In La Pez, No. 12-A is in gray lime at 1,750 feet, with the hole caving; and, in Mendez, its No. 17 is in gray shale at 170 feet. National Lines' No. 35 Chapacao, in its right of way, is in the Tamasopa at 1,960 feet; No. 40 is in gray lime at 1,800 feet, and three other locations are rigged.

In the Corcovado district, La Corona Petroleum Co.'s No. 21, Lot 6, is in the San Felipe at 1,910 feet; No. 23 is in the San Felipe at 1,285 feet. Mexican Gulf Oil Co.'s No. 39 Chapacao is in gray lime at 1,385 feet, and No. 41 is a derrick. Mexican Sinclair Petroleum Corp.'s No. 1, Lot 13, Garruche, is in green and gray lime at 1,860 feet, showing some oil.

In the Marland Field, Cia. Pet. Franco Espanola, No. 45 Limon is in black lime at 2,436 feet; No. 53 cemented 8-inch in gray lime at 1,440 feet and No. 56 is lime at 1,655 feet.

In Los Esteros, American International Fuel Co.'s No. 26 Los Esteros is in white lime at 2,600 feet; No. 27 is in brown lime at 1,470 feet.

At Rayon, India Oil Co.'s No. 1 is in a brown lime at 1,800 feet.

At Tanceme, International Petroleum Co.'s No. 1 Tanceme is in the Tamasopa at 5,452 feet, making it the deepest oil yet drilled in Mexico in the search for petroleum.

In the Topila district, La Corona Petroleum Co.'s No. 21 is in shale and shells at 1,970 feet. Cochrane and others' No. 10 Pac. de Agua, is drilling around 2,000 feet in the San Felipe.

In the Caracol, Venable and others' No. 1 cemented 8-inch at 1,717 feet in the San Felipe, and No. 3 has spudded.

At San Mateo, south of Panuco, Cia. Pet. Financiera, No. 2, Lot 14, cemented 10-inch in 1,180 feet in blue shale.

John Muir, one of the ablest geologists ever in Mexico, and for a long while in charge of all northern districts for La Corona Petroleum Co. and recently chief geologist for the same company, has left for London and the Hague, to await new orders from the Dutch Shell interests in contemplation of his being transferred to new fields of endeavor. Muir leaves behind him in Mexico a host of friends reckoned from the toolies to general managers.

OKLAHOMA FIELDS

(Continued from Page 50)

ground for No. 6-A School Land, CEL NE SE SE, Section 13-22-4w. Sinclair Oil & Gas Co.'s No. 39, SE cor. NE, Section 13-22-4w, had sand 2,708-18 feet and made 2,580 bbls.; No. 2, SW cor. SE NE, Section 13-22-4w, made 700 bbls. from sand 2,502-9 feet; No. 6, CNL NW NE, Section 13-22-4w, is dry at 1,618 feet; No. 15 N. Walker, NE cor. NW NE, Section 13-22-4w, is drilling at 2,350 feet; No. 29 N. Walker, SE cor. NE NE, Section 13-22-4w, is dry at 2,750 feet; No. 43, SE cor. NE, Section 13-22-4w, is drilling at 450 feet; No. 44, NE cor. SE NE, Section 13-22-4w, is drilling at 975 feet; No. 45, SE cor. NE NE, Section 13-22-4w, is rigged up; No. 46, NE cor. NE, Section 13-22-4w, is spudded; No. 49, SE cor. NE, Section 13-22-4w, is spudded.

Magnolia Petroleum Co. has a dry hole at 4,730 feet in No. 1, NE cor. NE, Section 15-22-4w. Carter Oil Co.'s No. 53, SE cor. NW, Section 24-22-4w, is dry at 3,680 feet. Healdton Oil & Gas Co.'s No. 32, SE cor. NW NE, Section 24-22-4w, is dry at 4,504 feet. Sinclair Oil & Gas Co. has built the rig for No. 43 Hartley, NE cor. SW NW, Section 18-22-3w; and for No. 51 Walker, SW cor. SE NE, Section 13-22-4w; and for No. 52 Walker, NW cor. SE NE, Section 13-22-4w; and for No. 53 Walker, NE cor. SE NE, Section 13-22-4w; No. 38 CSL SW NW, Section 18-22-3w, is spudded; No. 39, SW cor. NW NW, Section 18-22-3w, is rigged up; No. 40, SW cor. NW, Section 18-22-3w, is rigged up; No. 41 Hartley, SW cor. NW, Section 18-22-3w, is a new rig; the rig is built for No. 42 Hartley, NE cor. SW NW, Section 18-22-3w. Roxana Petroleum Corp. has built the rig for No. 2-T Schroeder, NW cor. SW, Section 18-22-3w, and is building a rig over an old hole in No. 8 Schroeder, NW cor. SW, Section 18-22-3w; the rig is on the ground for No. 11-L Schroeder, NE cor. SW SW, Section 18-22-3w; No. 2-L Schroeder, NW cor. SW SW, Section 18-22-3w, is completed in sand 3,119-46 feet and made 1,000 bbls. naturally; No. 3-L Schroeder, SE cor. SW SW, Section 18-22-3w, made 5,314 bbls. from sand 3,098-3,116 feet. Sinclair Oil & Gas Co.'s No. 2, SW cor. NW, Section 18-22-3w, had sand 2,505-17 feet and made 1,314 bbls; No. 22-A, NE cor. SW NW, Section 18-22-3w, had sand 4,256-95 feet and made 500 bbls.; No. 28, SE cor. NW NW, Section 18-22-3w, made 990 bbls. from sand 2,623-2,646 feet.

Noble County

Tidal Oil Co. and Ostot have built the rig for No. 1 Dower, SW cor. NW, Section 3-22-1w.

Magnolia Petroleum Co. has a rig up for No. 2 Hoffman, SE cor. NE SE, Section 16-21-2w.

Grant County

Brazille & Moser are drilling at 400 feet in No. 1 Royer, SW cor. NW, Section 34-26-4w.

Kay County

Comar Oil Co.'s No. 10, NW cor. SW, Section 21-29-1w, is rigged up and shut down; No. 13, NW cor. SW SW, Section 21-29-1w, had sand 2,064-88 feet and made 120 bbls. naturally; Moore Petroleum Co. has dug the cellar for No. 1 Neal, SE cor. SE, Section 4-28-2w. Comar Oil Co. is drilling at 500 feet in No. 1, NE cor. SW, Section 17-27-1w.

Harold Petroleum Co. has a rig on the ground for No. 6 Kelly, NE cor. SE SE, Section 4-27-1w; No. 3 Case, NE cor. SE SW, Section 4-27-1w, is being cleaned out to drill deeper at 2,610 feet. Blackwell Oil & Gas Co. is drilling at 750 feet in No. 2, NE cor. SE, Section 5-27-1w. Harris-Haun's No. 2, NE cor. NE, Section 8-27-1w, had sand 3,453-58 feet and made 90 bbls. Blackwell Oil & Gas Co. has a gas well in No. 4, C NW SE, Section 9-27-1w. Sand was 3,430-38 feet and the well made 13,000,000 feet. Ostot Development Co.'s No. 1, SW cor. NE NE, Section 16-27-1w, is dry at 3,726 feet. Marland Oil Co. has moved in tools for No. 2 Robinson, NE cor. SE, Section 17-27-1w. Prairie Oil & Gas Co. has spudded No. 1-B, NE cor. NW, Section 17-27-1w. Marland Oil Co. has spudded No. 1, NE cor. SW, Section 19-27-1w. Prairie Oil & Gas Co.'s No. 2 Vanetta, SW cor. SE, Section 1-26-2w, had sand 2,932-57 feet with 600 feet of oil in the hole and is fishing for a bit. In the Hubbard Pool the Marland Oil Co.'s No. 5, NE cor. SE NW, Section 12-26-2w, made 180 bbls. from sand 2,960-65 feet; No. 5, NW cor. NE NE, Section 12-26-2w, swabbed 50 bbls. from sand at 2,952-68 feet.

In the Thomas Pool, Marland Oil Co. has a gas well in No. 7, SW cor. NW SW, Section 15-25-2w. Sand was 2,570-80 feet and the well made 4,000,000 feet. Marland Oil Co.'s No. 8, NE cor. SW SW, Section 15-25-2w, made 6,000,000 feet of gas in sand 1,180-90 feet. The Carter Oil Co. is drilling at 700 feet in No. 5 Turk, NE cor. NE, Section 2-25-2w. Pennok Oil Co. has a dry hole at 2,645 feet in No. 2-G, SW cor. SE SE, Section 34-25-1w. T. B. Slick's No. 4 Endicott, NE cor. SE SE, Section 35-25-1w, had sand 3,934-78 feet and swabbed 150 bbls. after a shot of 40 quarts. Comar Oil Co. has a failure at 4,416 feet in No. 8-W, SW cor. NE, Section 2-24-1w.

Okfuskee County

The Texas Company has spudded No. 1, NW cor. SW, Section 27-12-10. E. L. Robinson and others have spudded No. 1 Hooks, NE cor. NW, Section 10-12-11. Phillips Petroleum Co. is drilling at 1,000 feet in No. 1 Randall, NW cor. NE NE, Section 10-12-11. Prairie Oil & Gas Co.'s No. 1, NW cor. NE, Section 35-11-9, is a gas well with 32,000,000 feet of gas in sand 3,110-39 feet. E. L. Robinson and others have spudded No. 1, NE cor. NW NW, Section 35-11-9. Minnehoma Oil Co. has a rig on the ground for No. 1 Buck, SW cor. NW, Section 36-11-9. Empire Gas & Fuel Co. has completed No. 1, NW cor. NW, Section 30-11-10. Champlin Refining Co. is drilling at 1,650 feet in No. 6 Holmes, NW cor. SE NW, Section 22-11-11. J. K. Leard and others have a rig on the ground for No. 1 Mahardy, NW cor. SW, Section 8-11-11. Champlin Refining Co.'s No. 6, NE cor. SE NW, Section 22-11-11, is good for 150 bbls. in sand 2,612-27 feet.

Payne County

Superior Oil Co. has a rig up for No. 1 Parmel, CSL SE SW SE, Section 31-18-4. A. A. Bailey is drilling at 450 feet in No. 1, NE cor. SW, Section 11-19-6.

Magnolia Petroleum Co. has a gas well in No. 4, CNL NE NE, Section 6-17-4. Sand was 3,530-70 feet and the well is completed for 20,000,000 feet of gas.

Pawnee County

Magnolia Petroleum Co. has spudded No. 4, NW cor. SW SW, Section 9-20-6. Prairie Oil & Gas Co.'s No. 2, CNL NW SW, Section 15-20-6, had sand 3,093-3,131 feet and made 8 bbls. Magnolia Petroleum Co. has the rig up for No. 3 Truesdale, NW cor. SE NE, Section 17-20-6. Fern Oil Co. has a rig up for No. 3 Leshner, NE cor. SW NW, Section 22-20-6. Davis Drilling Co.'s No. 1, NE cor. SW, Section 28-20-6, is dry and abandoned at 3,380 feet. J. B. Grieves has a rig up for No. 3 Anglin, CEL SE NW, Section 31-21-8. Prairie Oil & Gas Co. has completed No. 7, CSL SE SE, NW Section 10-20-8, for 10 bbls. after a shot of 40 quarts in sand 2,415-50 feet.

Comanche County

Ashcraft and others are fishing at 900 feet in No. 1, SE cor. SE, Section 20-2 10w. Green and others have rigged up a rotary for No. 2, SE cor. SW NW, Section 24-2-10w. Westheimer & Daube are drilling at 1,325 feet in No. 1, NE

cor. SE NE, Section 24-2-10w. D. W. Appleby has rigged up a rotary for No. 3 Poland, SE cor. NW, Section 5-1-10w. Green and others have rigged up a rotary for No. 1 Gilman, NW cor. NE SW, Section 14-1-12w.

GULF COAST

(Continued from Page 58)

State "B" sanded up at 4,825 feet; No. 5 is drilling at 3,060 feet; No. 4 State "E" is fishing at 4,610 feet; No. 1 State "C" sanded up at 4,325 feet. Sun Oil Co.'s No. 1 Belile is drilling at 3,650 feet. Supreme Oil Co.'s No. 4 Jackson is drilling at 3,500 feet. Texhoma Oil Co.'s No. 5 Chesson is drilling at 3,150 feet; No. 6 is rigging up to work over; No. 9 is rigging up. Gulf Production Co.'s No. 11 Kishi-Lang is rigging up; No. 23 is drilling at 900 feet; No. 3 Hager fee is drilling at 4,525 feet.

At South Liberty, Humble Oil & Refining Co.'s No. 1 Deussen "B" is drilling at 3,400 feet; No. 2 Welder, across the river, is drilling at 745 feet. Coastal Oil Co.'s No. 1 Lecoure is shut down at 2,375 feet. Premium Oil Co.'s No. 1 Mitchell is a derrick.

Rio Bravo Oil Co.'s No. 5 Fountain at Saratoga is drilling at 3,950 feet. Vacuum Oil Co.'s No. 3 Teel is drilling at 4,375 feet. Regna Oil Co.'s No. 1 Petty is drilling at 1,450 feet.

At Goose Creek, Humble Oil & Refining Co.'s No. 67 Simms-Smith is drilling at 2,800 feet; No. 68 is drilling at 4,400 feet; No. 22 Gaillard Peninsula is drilling at 2,900 feet; Nos. 12 and 17 are derricks. Sun Oil Co.'s No. 8 Wright is drilling at 1,795 feet. Powell Oil Co.'s No. 6 Bryan, is drilling at 2,725 feet. Gulf Production Co.'s No. 12 Chapman-Bryan is a derrick; No. 5 Hirsch-Stateland is drilling at 4,375 feet; No. 7 Wright is drilling at 2,600 feet; No. 33 Beaumont Petroleum is drilling at 2,200 feet; No. 8 Stateland Oil is drilling at 3,375 feet; No. 12 Gaillard fee is drilling at 4,325 feet.

Rio Bravo Oil Co.'s No. 2 P. F. Settegast, at Pierce Junction, is drilling at 1,050 feet. Navarro Oil Co.'s No. 2 Cain is drilling at 4,325 feet. Gulf Production Co.'s No. 18 Taylor is rigging up to deepen.

Gulf Production Co.'s No. 7 Blakeley "B", in the Blue Ridge Field, is drilling at 400 feet; No. 3 Invincible Oil is rigging up to deepen.

Vacuum-Gulf's No. 10 Miller, at Lockport, is rigging up; Nos. 7 and 8 are cutting liners at 3,875 and 3,850 feet respectively; No. 9, which tested dry at 4,350 feet, will drill deeper; No. 11 is a derrick; No. 3 Farquahar is a derrick; No. 1 Freiberg and Wolf is drilling at 5,010 feet; No. 4 Lock-Moore is drilling at 3,125 feet.

At Edgerly, Green Oil Co.'s No. 7 Moore is drilling at 2,760 feet. Gulf Refining Co.'s No. 31 Bright-Penn is drilling at 2,955 feet.

In the Batson Pool, Gulf Production Co. has started drilling No. 60 Choate. Kirby-Capitol Oil Co.'s joint No. 5 Hodges is a derrick.

In the Sour Lake Pool, Humphrey Corp.'s No. 3 Griffith is drilling around 3,900 feet. Peveto Oil Co.'s No. 12 Carpenter is fishing at 900 feet. Sun Oil Co.'s No. 1 Libbie is around 2,910 feet. Yount-Lee Oil Co. is rigging No. 4 Gilbert. Sour Lake Oil Co. has a location for No. 1 Bashara.

At Spindletop, Yount-Lee Oil Co.'s No. 4 Gladys is drilling below 2,910 feet. Porch and Telshaw's No. 3 Trembly is at 1,565 feet. Seven Oil Co.'s No. 1 Trembly is at 355 feet. Barbee Oil Co.'s No. 1 Garrick is at 655 feet. Gulf Production Co.'s No. 186 Gladys is deepening. Brown is rigging No. 1 fee Gladys.

At High Island, Sun Oil Co.'s No. 6 Cade is around 3,300 feet. No. 10 Cade is below 3,255 feet. Gulf Production Co.'s No. 5 Smith is drilling below 3,450 feet.

In the Hull Pool, Republic Production-Houston Oil Co.'s joint No. 126 is drilling at 1,700 feet; No. 127 is drilling at 1,125 feet; Nos. 28 and 129 are rigging up. Humble Oil & Refining Co.'s No. 21 Guedry will pump at 2,975 feet; No. 6 is rigging up to work over; No. 5 Merchant is a location; No. 4 Abel "B" is drilling at 1,025 feet. Mecom Oil Co.'s No. 2 Taylor is drilling at 3,400 feet; No. 9 is a derrick. The Texas Company's No. 1 Hannah is drilling at 3,860 feet; No. 10 Merchant is cutting liner at 4,000 feet; No. 2 Vacuum is milling at 2,300 feet. Houston Production Co.'s No. 6 Palmer is rigging up. Empire Gas & Fuel Co.'s No. 19 Barngrover is drilling around 2,500 feet. Gulf Production Co.'s No. 3 Thomas tested salt water; No. 17 Scarborough is drilling at 2,670 feet; No. 22 Morris-Phillips is drilling at 2,410 feet; No. 17 J. C. Baldwin fee is drilling at 2,650 feet; No. 27 Phoenix Development Co. is drilling at 2,840 feet; No. 19 is rigging up; No. 67 is drilling at 3,175 feet; No. 5 is drilling deeper at 2,975 feet.

At Boling Dome, Sinclair Oil & Gas Co.'s No. 2 Taylor has cemented; No. 4 is bailing at 3,950 feet; No. 5 is running in tubing on seal; No. 6 is a derrick. Sun Oil Co.'s No. 1 Farmer is drilling at 600 feet; No. 11 Taylor at 3,500 feet; No. 3, shut down at 3,850 feet; No. 4 is a gas well; No. 5, shut down at 3,975 feet; No. 6, shut down, and Nos. 7, 8, 9 and 10 are locations. Humble and Gulf's No. 4 Hawes, has cemented at 2,750 feet; No. 6 is drilling at 4,320 feet; No. 7 at 2,870 feet; No. 9 at 2,400 feet; No. 10 at 2,710 feet; No. 11 is a derrick; Nos. 13, 14, 15, 16 and 8 are locations. The Texas Company's No. 5 Taylor cemented; No. 9 is rigging up; No. 8 drilling at 3,995 feet; No. 1 Felder drilling at 550 feet, and No. 1 Farmer is a derrick. Vacuum Oil Co.'s No. 1 Hooper is drilling at 4,550 feet; No. 2 is drilling at 3,775 feet; No. 3 is drilling at 1,400 feet, and Nos. 4 and 5 are locations. Seagraves-Moody's No. 1 Woodfin is drilling at 840 feet. Humphrey Corp.'s No. 1 Mick is drilling around 2,300 feet, and No. 1 Woodfin is rigging. These are out northwest of production. Sun Oil Co.'s No. 1 Farmer, and The Texas Company's No. 1 Felder are 2 miles away on the northeast side of the dome and are located across the Bernard River in Fort Bend County. The Boling Dome is in the southeastern part of Wharton County. When the Gulf Co. got the salt and gyp in No. 1 Mick it extended the salt area away beyond the early estimates of its area and upset all predictions.

CHICKASHA GAS SUIT TO BE HEARD JUNE 1

OKLAHOMA CITY, Okla., May 15.—The suit of the Oklahoma Natural Gas Co. to prevent the Oklahoma Gas & Electric Co. from entering into a contract for the purchase of gas from J. B. Nichlos of Chickasha has been set for trial in Oklahoma City, June 1, by District Judge William H. Zwick. The Oklahoma Natural Gas Co. charges the Oklahoma City company would violate a contract now in force between the two for the delivery of gas at the Oklahoma City gate if a contract as proposed is made with the Chickasha producer, and that a heavy loss to the Oklahoma Natural Gas Co. would ensue by reason of its having made a large expenditure in the laying of a pipe line to Oklahoma City from the Grady County Gas Field.

The proposed Nichlos contract is pending. Consummation of it was delayed by a demand of Nichlos' financial backers that the contract provide for an increasing rate for gas during the first five years as an insurance against loss in event of decline in gas production.

REPAIR RUMANIAN PIPE LINE

In an effort to solve the problem of transport to the seaboard, the Rumanian Government has advanced 10,000,000 lei for the repair of an existing pipe line; definite proposals are under consideration for the construction of two 5-inch lines from Ploesti to Constantza, 200 miles.

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Quality Quantity Service

An organization like the Taubman Supply Corporation is necessary to your operations, as we carry the largest and most reliable stocks of line pipe and casing ever known to be carried in the Mid-Continent.

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35 CENTS
a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

GUARANTEED 5,000-FOOT test well to start drilling before June 1 in South Mississippi. Derrick up, machinery on the ground. Five possible producing horizons to test. Well located near center of 200-acre townsite subdivision on I.C.R.R. and Magnolia Hi-Way. Lots in townsite surrounding well 25 feet by 135 feet selling at $200 each with 1/20th of 1 per cent of net oil from test well included with each lot purchased. Don't overlook this gamble at the price. Remember Burkburnett. For complete information, write Magic City Development Co., Gulfport, Miss.

THE NEWBLOCK OIL CO., F. Julius Fohs, president, have just spudded in a deep test on what is known as Carlos Dome in Grimes County, close to where the big gasser was struck about a year ago, spraying oil. We are now offering some good close-in stuff very reasonable. Address D. J. Reynolds, Box 851, Navasota, Tex.

WILL LEASE block for well in line of production. Butler County, Kans. Write D. A. Bisagno, Augusta, Kans.

FOR SALE—Leases, production and royalties in Barren County, Kentucky. Shallow drilling, high gravity oil, long life wells. Have some leases adjoining production. Small rentals. L. W. Preston, Glasgow, Ky.

FOR SALE — Easy terms or trade, can't look after it; 40-acre, lease 4 miles east of Copan, Okla.; in oil field; no dry hole; several offsets in 600 feet also Bartlesville sand. Air is working wonders; 1 Leidecker rig, one 6-horse engine and power, one Jones oil well reamer. Home in Nowata. Box 599, Independence, Kans.

ADJOINING
HUMBLE OIL & REFINING CO.'S big drilling block with well now drilling below 800 feet. My acreage is located in southern Reeves County, Texas, in the big San Martine structure, and adjoins the drilling block of the Humble Oil & Refining Co., who are now drilling below 800 feet. My acreage is as close as any one has been able to play to this well. In order to obtain new clients I am offering part of my holding in tracts of 10 acres and up at $4 an acre. Write for full information and my Free map drawn true to scale showing the exact location of the holdings of the major companies, and my acreage.
B. D. BUCKLEY
Central Natl. Bank Bldg., St. Louis, Mo.
Reference: Page Bank, St. Louis.

WOULD like to hear from parties wishing to invest in Oklahoma. Wildcat leases and royalties. W. H. Adams & Co., 203 Clinton Bldg., Tulsa, Okla.

SETTLED production and drilling propositions. R. E. Cope, Bowling Green, Ky.

WRITE for my state of Texas oil map free. Oil leases exclusively. Reference Mercantile Agencies.
C. W. WEBSTER
W. T. Waggoner Bldg.
Fort Worth, Tex.

WEST TEXAS — 47,000 acres, solid block, 35 cents, with annual rental of 25 cents per acre. Also other acreage located in Howard and Glasscock Counties. Six thousand acres solid block in Glasscock County for a well. R. L. Cook, Big Spring, Tex.

SOUTHEAST NEW MEXICO
Can furnish practically proven leases in Artesia Field, Eddy County. Also other tracts in Eddy, Chaves and Lea Counties. Particulars on request.
H. T. ORCUTT
1114 Colcord Bldg., Oklahoma City, Okla.

OIL LEASES—In Dallam and Hartley Counties, where the "Big Play" is now on; 88 form, 10-year leases in tracts of 80 acres up. Prices from $1.25 per acre up. Write or wire W. H. Lathem, Dalhart, Tex.

LEASES—PRODUCTION

FOR SALE—Lease, three miles west of Kremlin, Okla., Garfield County; 160 acres northeast Section 19-24 5w. Give me your best cash offer for five-year lease. Box 458, Bowling Green, Ky.

LEASES and royalties in Winke County, Texas, near deep test now drilling at 1,500 feet. Big companies bought acreage. Oscar Clapp, Kermit, Tex.

SPLENDID ACREAGE 6 miles north of Panhandle, Tex., at $35 per acre. Two wells starting about mile away. Also have drilling block same locality. A. B. Hugo, Enid, Okla.

FOR SALE—80 acres, 5 miles northwest of Luther, Okla., and 1 mile north of main highway. Several wells being drilled nearby. There is also a good 4-room house, two good water wells, 50 pecan trees, smoke house, garage, well fenced and 55 acres in cultivation. Is now rented to reliable party until December 31, 1926. Price $4,000. Reference, First National Bank, Luther, Okla. Want to sell at once, write S. H. Adams, Box 322, Fordyce, Ark.

HAVE SEVERAL pieces of flush and settled production for sale in Oklahoma and Wichita Falls districts. Prices reasonable and terms can be arranged if necessary. P. O. Box 1144, Dallas, Tex.

HARTMAN & SARGENT — Leases, royalties, production, bought and sold, Dept. A. Geological and property management, Dept. B. You'll like our service. Office, Lawrenceville, Ill.

FOR SALE — Leases, production and partly developed leases. On account of shallow drilling, low cost of equipping, small operating cost, high gravity oil and long life production, Kentucky offers the best opportunity for the small investor. We have for sale producing properties with 2 to 100 bbls. daily production and large undeveloped acreage with proven locations to drill. Address W. P. Harley, Bowling Green, Ky.

HAVE BUYERS for flush or settled production in Oklahoma and North Texas. Vern R. Hartman, P. O. Box 442, Dallas, Tex.

WATCH
CALHOUN COUNTY, MISSISSIPPI
Three counties, Calhoun, Webster and Lee, in line for a big play; several wells to be drilled; now is the time to get in. New 5-year leases; two years without rental, $1.25 per acre. Attractive block for test well to reliable parties. L. B. Mawk, Calhoun City, Miss.

HARTLEY COUNTY leases. M. F. Beaumont, Hartley, Texas.

WILL SELL my 5 acres, located southwest of Guadalupe County. Only reasonable price will be considered. Box B-294, The Oil and Gas Journal, Tulsa, Okla.

TEN-YEAR oil leases. No rentals. Crockett County, Texas. Send for true map. Paul Kons, Box 291, Fort Worth, Tex.

FORT SMITH THROUGH
10,000 acres, good structure and geology. Will sell or consider drilling contract. J. F. Dreisbach, 512 Central Ave., Hot Springs, Ark.

FOR SALE—Small production, good equipment. Opportunity knocks. Write P. O. Box 185, Springfield, Tenn.

Through the Classified Wants Section you can interest 25,000 oil men in your product or want. Mail your advertisement now for next week's issue. It doesn't cost much.

ROYALTIES—PRODUCTION

FOR SALE — 40 acres and royalty, Okmulgee County. Ida Alice Dowd, 557 High St., Denver, Colo.

FOR SALE—Undivided 1/64th royalty interests in wells drilling and to be drilled in Shackelford and Callahan Counties, Tex. One hundred sixty acres checkerboarded. Bottom hole money and placed in bank until wells finished. Good geology. Good titles. Form 88 leases. Depth 1,500 feet. Price $187.50 each interest. One or more. Allen Buell, Jr., Grace Hotel, Abilene, Tex. References, Citizens National Bank, Abilene, Tex.

ROYALTIES—PRODUCTION

TEXAS PANHANDLE

Royalties in large or small units to suit any size buyer in fastest growing and most rapid developing oil field in middle west. Write for list of offerings. B. O. Taylor, 306 Blackburn Bldg., Amarillo, Tex.

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Oil Royalties
All Southwestern Fields
Bought and Sold
Inquiries Invited
REAVES & CO.
P. O. Box 345
SAN ANTONIO, TEXAS

WANT TO BUY royalty production, in any amount, anywhere, in Mid-Continent Field. A. B. Hugo, Enid, Okla.

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Compute white space at the above rates

Mail your advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

EQUIPMENT WANTED

WILL PAY CASH for bargain in good used shallow rig. Preferably near Ardmore. Send details to Albert V. Jensen, Marcus, Iowa.

FOR SALE—EQUIPMENT

FOR SALE—2,500 feet National 6-inch seamless upset drill pipe with 18-inch Union Tool Co. tool joint on every fourble. This is second-hand but in excellent condition. Located at railroad point in Houston County, Texas. P. O. Box 748, Houston, Tex.

CRAGO CUT GEARS
Worthy of your confidence. General machine work. 1416 Walnut, Kansas City, Mo. Phone Harrison 7660.

STEAM DRILLING ENGINES AND BOILERS FOR SALE
Fifteen Ajax 12x12 Steam Drilling Engines and 12 Special 25-h.p. Oil Country Boilers with 10-foot flues. All of the above in first-class condition. Located near Wooster, Ohio. Address reply to the East Ohio Gas Co., 1405 E. Sixth St., Room 524, Cleveland, Ohio.

FOR SALE
Two 12x6x14 "National" single acting steam pumps. Also smaller pumps of the same make.
Three 100-ton ball horizontal refrigerating machines.
One 200 h.p. Twin Duplex Western Gas Engine.
One 160 h.p. Rathbun-Jones Vertical Gas Engine.
Four steam-driven Westinghouse Air Compressors.
This equipment is in good condition and priced right. For further particulars address
DEVONIAN OIL CO.
Box 1441 Phone 6221
Tulsa, Okla.

FOR SALE—EQUIPMENT

FOR SALE—50 Sharples No. 6 Super-Centrifuges, 30 of which have never seen any service, motor driven, in first-class condition, at less than half of the original cost. Acme Oil Corp., 189 North Clark St., Chicago, Ill.

FOR SALE
Three 27 Stars with 28-h.p. McNamara Boilers, steel in good shape. Also one 4½-inch Parkersburg machine with 28-h.p. Mounted O.W.S. Boilers. Steel from 16-inch bits to 5-inch. Will give complete list of tools on application. Mid-Egypt Gas & Oil Co., Ava, Ill.

FOR SALE — Three unit casinghead gasoline plant in A-1 condition, consisting of two 40-h.p. enclosed type Bessemer gas engines, one 40-h.p. Black Bear gas engine, used only three months, two Ingersoll-Rand 8½x4½x10 compressors, one Bessemer duplex 18x12 vacuum pump, three high pressure accumulator tanks, condenser louvres 30x40, 10 feet high, one lot cast iron headers, airjammer with two tanks; shafting and belting; galvanized building 50x50 feet.
Also one 32-h.p. Fairbanks-Morse type Y distillate engine and York ammonia compressor for 30-ton ice plant; one Lucey Special rotary rig complete with two Johnson gumbo buster, pumps and 2,100 feet of new National upset 4-inch drill pipe; one lot Crane mixed fittings, both flanged and screwed, from 12-inch to 4-inch, including Chapman gate valves from 12-inch to 6-inch; one 15 KW 110-volt 3-phase General Electric generator complete with switchboards. All of above stuff is in A-1 condition and will stand inspection and must be sold at once. If interested write or wire Rust Supply Co., Burkburnett, Tex.

FOR SALE — One complete 28 Star drilling machine. For complete information address Box 31, Tulsa, Okla.

FOR SALE—One 25-h.p. Reid gas engine, also one 16-foot bandwheel power, rebuilt in shop, like new, at half the cost. Call 3-3083 or 2-3447. G. W. Darling, Box 488, Tulsa, Okla.

DRILLING MACHINES FOR SALE
Machines and rigs ranging in sizes from No. 4 Keystone to Standard rigs for sale, also a large stock of drill tools of every size and description. Write or wire us for prices. Sewell Well Co., 1627 Locust St., St. Louis, Mo.

FOR SALE
Fully equipped machine shop for oil country work, including buildings, 26 Bridgeford tool lathe, shaper, drill press, steam hammer, boiler, oil engine, No. 12 pipe machine, necessary cranes and small tools. Equipment new when installed at Gridley, Kan., 1923. For sale on account of ill health. For further information communicate with the Western Drill Tool & Supply Co., Chanute, Kan. Phone 480.

FOR SALE — Heavy duty Ingersoll-Rand Compressor. Two Troy Trailers. Box 327, Dewey, Okla.

USED LINE PIPE FOR SALE
35,000 feet 2½-inch
50,000 feet 3 -inch
75,000 feet 4 -inch
50,000 feet 6 -inch
Two miles 60-pound first-quality relaying rails.
For immediate shipment from our Texas yards.
KEYSTONE PIPE & SUPPLY CO.
315 W. T. Waggoner Bldg.
Fort Worth, Texas.

FOR SALE—Ingersoll-Rand A No. 1 Type direct connected steam driven compressor, size 24x16¼x30, in first class order. The Tower Gasoline Co., Oklahoma City, Okla.

FOR SALE—MAPS

FOR OIL FIELD MAPS
of Eddy and Lea Counties, New Mexico.
Write
SMOKE HOUSE
Artesia, New Mex.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

POSITION WANTED

UNIVERSITY PROFESSOR of geology desires position on geological staff of oil company beginning June 15. Two years' experience in Mid-Continent fields. Box B-305, The Oil and Gas Journal, Tulsa, Okla.

EMPLOYMENT MANAGER: You will find listed with this Bureau men experienced in all class of oil field work either skilled or unskilled. Our service is free to you. Correspondence solicited. Oil Field Service Bureau, Box 702, Ranger, Tex.

MAN, AGE 30, at present employed as petroleum valuation engineer, desires position with large oil company in minor executive capacity offering better opportunity for advancement. University degree, specializing in petroleum geology, valuation and accounting. One year's experience producing leases, two years accounting department, two years training, including law, finance accounting, etc. Intelligent, dependable and not afraid of hard work. Box B-307, The Oil and Gas Journal, Tulsa, Okla.

OFFICE WORK, desired by experienced young lady in filing, detail and typist, P. B. X. board. Box 1326, Tulsa, Okla.

ACCOUNTANT and auditor, age 32, thoroughly experienced in handling taxes, insurance, office systematizing and executive work, desires connection with progressive oil company in Tulsa. Highest references furnished from local parties. Box B-304, The Oil and Gas Journal, Tulsa, Okla.

YOUNG MAN, 36 years old, now in semi-executive position in charge of drilling production and land departments, desires new connections.

Many years of practical field experience in drilling cable and rotary wells and producing same, in Louisiana, Arkansas, Texas, Oklahoma and Kansas.

Thoroughly conversant with wildcat well propositions as present position entails the responsibility of keeping a number of wells constantly in rotation and financing same.

Some experience with casinghead gasoline contracts and the operation of plants.

The opportunity to demonstrate capabilities is paramount, remuneration and base of operations secondary. Box B-291, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST, university graduate; 10 years in field with major companies, desires connection with reliable oil company or operator. Box B-281, The Oil and Gas Journal, Tulsa, Okla.

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Results sure, swift, economical. Employ the One Great Plan—the plan that gets money. Avoid abortive "mail order" and "phony" broker schemes. Describe proposition. Hansel Financing Specialists, 212-GE Earlham St., Pittsburgh, Pa.

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RAISE CAPITAL

Through the sale of securities in your corporation. Twenty-five years' experience behind plan.

NORTHCLIFFE CORPORATION
25 West 43rd St., New York, N. Y.

DO YOU NEED MONEY for organizing or financing oil or mining deals? Write 117 E. 10th. Oklahoma City, Okla.

ORCHARDS AND FARM LANDS

TWO FEE ranches. M. F. Beaumont, Hartley, Tex.

RESULTS ARE WHAT COUNT

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* * *

"Renew my ad for another month. Change it to read 2,000 acres instead of 6,000 acres, as I have sold 4,000 acres already."

* * *

Whenever you want to buy or sell production, equipment, royalties, leases, or service of any kind, use the Classified Section and you will get good results.

The OIL and GAS JOURNAL
TULSA, OKLA.

HELP WANTED

DERRICK SALESMEN WANTED

A large steel derrick manufacturer wants salesmen for Oklahoma, Kansas and Texas. Derrick sales experience preferred but oil field selling experience and acquaintance necessary. Dependable men and hustlers only wanted. Reply fully as to experience, salary, etc. Box B-303, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Specialty salesman who is now selling to field superintends and supply companies. We want representation in Texas. Some one needing a good fill-in line should write. We build a line of surface equipment such as powers, casingheads, stuffing bxoes, beam hangers, elevators, sucker rod hooks, etc. When writing state line you are now selling. Box B-301, The Oil and Gas Journal, Tulsa, Okla.

LARGE PIPE LINE COMPANY desires civil or mechanical engineering graduate with three or four years' practical experience, not necessarily in oil business. Position offers opportunity to learn pipe line business and work into management of operation and construction. Will pay right man good salary. State age, education, experience and references, in detail. Box B-300, The Oil and Gas Journal, Tulsa, Okla.

PATENT ATTORNEYS

G. C. Waldrop, U. S. Patent Attorney
R. W. Seawell, Manager
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PATENT-SENSE — Valuable book (free) for inventors seeking largest deserved profits. References include prominent oil men. Write Lacey & Lacey, 718 F. St., Washington, D. C. Established 1869.

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240 Ouray Bldg. Washington, D. C.

INCORPORATIONS

DELAWARE incorporators. Charters fees small, forms. Charles G. Guyer, 901 Orange St., Wilmington, Del.

YOUR VACATION

COLE'S POINT CAMP invites you to vacation where the air is cool and bracing. Fishing, best you can find for Muskellunge, Pike and Bass. Tulsa folks are our neighbors. Come early. Mrs. Janet MacDonald Cole, Fifield, Wis.

COME TO HIAWATHA LODGE

Situated on Wild Horse Island, consisting of 4,200 acres in beautiful Flathead Lake. Nature's wonderland. Marvelous grouping of beauty and rugged grandeur.

Enjoy Montana's summer, long pleasant days and cool, refreshing nights. No mosquitos, or other insects. Positive protection against hay fever.

Write to Clara I. Edgington, Hiawatha Lodge, Dayton, Mont., for free literature, including beautiful illustrated booklet.

BUSINESS OPPORTUNITY

PATENTS Nos. 1,562,690 and 1,542,864, covering Cracking Stills are for sale. Address inquiries to Max F. DeBajligethy, 1219 Granger St., Houston, Tex.

FOR SALE—No. 2 National drilling machine and tools; bits 15½-inch down. Might trade interest in machine for good lease to drill. Box B-306, The Oil and Gas Journal, Tulsa, Okla.

NOTICE — Oil Well Supply Manufacturers: I have a patent pending that should be issued soon on a working barrel coupling with a built-in standing valve using up to and including a 1¼-inch gas anchor pipe and 1¼-inch ball seat. Simple and fool proof. Cheaply made. I will sell part interest or let on straight royalty. If interested I will send specifications and drawing on request. Address Box B-296, The Oil and Gas Journal, Tulsa, Okla.

INVESTORS, ATTENTION — A man with almost 15 years' experience in the production, drilling and lease departments of the oil business would like to get lined up with some companies or individuals that will be interested in having me purchase leases or royalties in this section of the state on interest basis. I have been in this part of the state for the past 10 months, and scout most of the fields and wells drilling. Can furnish references. Office over Farmers' National Bank, Cross Plains, Tex. P. O. Box 405.

WE HAVE the lease one-quarter mile from flowing well no dry holes, can you furnish the money to drill first well? If so we can both get rich. Highest bank reference furnished. Address Box 572, Chicasha, Okla.

BUSINESS OPPORTUNITY

AN ESTABLISHED COMPANY desires to hear from parties who have patents or patentable ideas applicable to refinery construction or operation. We are in position to finance and develop and to exploit the sale and manufacture of desirable equipment or processes. Write Box B-302, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE good residential corner lot 131x160 feet on pavement in Muskogee, Okla., or will consider trade for good oil field material and equipment. No junk considered. Write: V. H. Combs, 415 Mid-Continent Bldg., Tulsa, Okla.

FOR SALE—Complete absorption gasoline plant, daily capacity 10,000,000 cubic feet of gas; must be moved from premises in 90 days. The Tower Gasoline Co., Oklahoma City, Okla.

IN OZARKS, near Yellville, Marion County, Arkansas, 80 acres with famous Crystal Spring which forms creek. Large Timber. Zinc shown up. Ideal for summer homes. Price $1,600. Fredricks, Springdale, Ark.

WANTED—Capital to help develop producing lease; 500 acres in proven Trenton Rock territory, western Ohio. Wells are inexpensive to drill and operate; very long lived. Will offer excellent investment to reliable party or entertain 50-50 drilling contract for part of acreage. Would form a combination with parties owning oil properties who are in position to command capital. Address W. H. A., 1074 Reibold Bldg., Dayton, Ohio. Ohio.

A NEW MILLION-DOLLAR Nevada mining corporation with large lead-silver holdings wants exclusive agent to handle stock sales. Address Box 1581, Station C, Los Angeles, Calif.

THE SCHEME of life is so arranged that some men have capital and need equipment, while others have salable articles and need cash. For these men, The Oil and Gas Journal Classified Section provides an excellent opportunity to broadcast their wants.

WABASH DRILLING CO., solicits your work. We maintain 10 strings of cable tools and will furnish estimates on work in any cable tool country. Bring on your wildcats. Wabash Drilling Co., office, Lawrenceville, Ill.

LETTERHEADS—PRINTING

CONSUMERS' LEDGERS

We are prepared to furnish from stock standard forms of gas meter Consumers Ledgers. Sample forms and quotation on request. First class material and workmanship.

DERRICK PUBLISHING CO.
Oil City, Pa.

THE ORGANIZATIONS that get the bulk of the oil industry orders are those who are known to the industry and who can combine quality with speedy service.

If you had your equipment listed in this section it would receive the same consideration that thousands are giving the good equipment advertised here.

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

WANTED

DRILLERS wanted to drill oil well to complete turnkey job. E. H. Moraine, Guthrie Center, Iowa.

WANTED to buy oil leases and royalties in Texas and Oklahoma. Quote prices, full particulars. American Lease & Royalty Co., Box 494, Miami, Fla.

WANTED—Producing royalties Oklahoma and Kansas. Give full details. P. O. Box 502, Independence, Kans.

WANTED TO EXCHANGE

1,000 SHARES of Pennsylvania Beaver oil, 20 Seaboard Oil Exchange for oil leases, land, etc. E. J. Lange, 1163 Garfield St., Hammond, Ind.

Chicago Refined Markets Unsettled

Higher Quotations Follow Boost in Tankwagon and Mid-Continent Crude Prices. Jobbers Taking Gasoline

By J. B. Waldo

CHICAGO, May 17.—The refined market is very firmly held as the result of the advances in crude and tankwagon prices in many marketing territories. Strength was added here by the favorable weather over the weekend and must result in a large gallonage at the stations although reports as to actual sales have not been received.

The price situation is still somewhat unsettled although it has crystallized considerably. Briefly the lighter oils are advanced about three-quarters of a cent while the effect on fuel oils has been simply to make the market firm without changing prices materially. There has been a very good demand for gasoline without much effort to sell. Jobbers have phoned and wired their requirements and paid the new prices although there are many orders unfilled on which the jobbers demand that the price ruling at the time the order was made prevail instead of the new prices claiming that the gasoline should have been shipped before the advances went into effect.

Prices Expected to Hold

Prices named here are expected to hold and may advance although it was stated that Navy gasoline was being offered to Ohio buyers at 13 cents seaboard and 13¼ cents from Pennsylvania refineries. Kerosene also was being shipped out of Toledo at 10½ cents immediate. The higher prices are increasing the demand for the 56-58 450 endpoint gasoline which is generally quoted only a quarter cent below the U. S. Motor grade, the new prices being 11¾ for the former and 12 to 12¼ cents for the latter grade.

The higher gravities are in little demand at prices three-quarters of a cent above the old prices. Natural gasoline is advanced a quarter cent.

The kerosene supply is more ample as several refiners have caught up and now can take on business for ordinary quantities for prompt delivery, the market holding firm at 10½ cents for the 41-43 water white product.

Kerosene Delayed

Kerosene is still being ordered quite freely, but not so largely as a week ago. The market is held at the top price by the lack of deliveries. There are many who believe that once the kerosene ordered has reached the tanks of the jobbers there will be a decided decrease in the demand and probably some reduction in prices as the present rates are to some extent at least the result of delayed shipments and small supplies at the refineries. In this connection one of the leading refineries when asked casually what it had to sell said it had plenty of Navy, a little of the higher tests and plenty of 42-44 kerosene. When asked how much of the latter, the stock sheet was consulted and the fact discovered that in one week the stocks of the 42-44 kerosene had been reduced to the same low level as of the 41-43 gravity evidently as the result of shipping the higher gravity on orders for the 41-43 either at a higher price or at the price of the lower grade as it could do very well, to satisfy regular customers. There is practically no kerosene available here at less than 11 cents and at this price the delivery dates are not settled, the refinery promising to ship as soon as possible.

There is still some demand for distillate, although it is not so marked as a week ago. The temperature has been just above the frost point most mornings and the evenings cool. This has caused a belated consumption of furnace oil. Some refiners are holding for 5 cents for a 38 40 straw distillate but have practically none to ship and say they will not have any this summer. When the gasoline demand decreases so they do not need to operate their cracking plants they will accumulate some distillate, but not until then and this may be in August or even later. In the meantime there is great urgency shown by tankwagon distributors for a price at which they can contract with their trade but several of the largest distributors as well as marketers report they cannot induce a refinery to make them a price for deliveries in the fall or over the season. One of the large buyers made a special trip to the group thinking that he could get some definite arrangement but was told in every case that next month would be the earliest. This is placing the distributors in a bad predicament. Usually they are in position to see their larger customers and contract for the season during June and then they can begin deliveries in July making the same arrangements as to payments on these early deliveries as do the local men. This practice enables them to purchase at the summer price and in some cases more than doubles their storage as they practically carry the oil in their customers' tanks. Now they are at sea as to what to do. There is an idea that distillate should approach in some degree the price of kerosene, and as one refinery put it, burners that require a light distillate "will be out of luck this season."

Oil Burner Fuel

There seems to be more or less of a feeling that the domestic oil burner is not going to show as rapid growth from now on. One heating engineer stated that the oil burner was just a "flash in the pan." His contention was that the burning of oil was wasteful and economically unsound. Another oil man said that when Henry L. Doherty launched his campaign to put the oil industry back of the domestic oil burner it was on the theory that there was a range of fractions between the gasoline distillate and fuel oil for which there was little demand and that the domestic oil burner would supply the refiner with a stable market for this product. Since then the extension of the cracking process has made a demand for these very fractions for cracking stock and during the season of largest demand for gasoline it is more profitable to crack the gas oil, light fuel oils and distillates than to sell them for furnace oils. This oil man said that of course a great abundance of cheap crude would change the situation since it would enable the skimming plants to run and this would provide a larger supply of all the fuel oils and distillates and make the running of the crackers less profitable. Like most of the problems in the industry, there are so many sides to it that no one seems prepared with an answer to the inquiry of the distributors of furnace oil as to what the price will be for the coming season.

The local demand for gas oil is moderate, even for the season, but the requirements of the refiners for straight run gas oil for cracking stock has relieved the pressure to sell that was becoming noticeable. It is currently reported that The Texas Company has bought largely and paid as high as 4¼ cents for good gas oil. Some refiners are offering what they term a two-cycle gas oil at 4 cents to the trade and the dark gas oil can be bought at that price with occasional sales reported at 3⅞. The market has been pretty well cleaned out of the stocks held by some distributors and marketers and the price situation is steady with prices ranging from 4 to 4⅜ cents, according to grade.

Fuel Oil Steady

Fuel oil is still moving steadily, but not very largely. There is more buying in the spot market and some sellers report a better business, due, they believe, largely to the fact that they can now get some of the business that was formerly covered by contracts. The latter are hard to make, in fact it is not the time of the year when much contracting is done as the expectation of buyers always is at this time of the year for lower prices a little later. Prices of the higher gravities of fuel oil continue very firm, but for the lower grades there is some lowering of prices. The decline is not great, ranging from 2½ to 5 cents, according to gravity, the heavier oils being the easier in tone. The Empire Refineries is now offering only a 16-18 gravity and some oil as low as 10 gravity is being put on the market, but it is hard to induce the average buyer to take in the heavier oils, as he believes they are not suited to his purpose. All argument regarding the greater heat units of the heavier oils is met by the counter argument that they do not flow as freely, fill up the screens and gum up the burners so that the users are still clinging to the lighter gravities. The use of the cracking process on the present large scale is changing the fuel oil business and so long as the price of crude makes it more profitable to crack all the fuel oil that can be run to the cracking stills, it is not impossible that the supply of fuel oil will be lighter during the summer when the demand for gasoline is greatest than in winter so that there will no longer be the former large differences between the summer and the winter price of fuel oil. Stocks of refinery fuel oil and of gas oil are, according to a survey made as of May 1, very largely in the hands of the refiners who intend to use them for charging their process stills. One large plant in the group that has always been a source of supply for gas oil to the extent of possibly several hundred cars a month and which was chiefly sold by one of the local marketers of fuel oils has dried up with the ordering of a cracking plant and is storing the gas oil for the day when it can be used to charge the stills now nearly completed. Some fuel oil is still available from this refiner but the quantity and quality of this will be charged with the completion of the cracking plant.

The Smackover market is quiet. The recent advances in price seem to have been due to the expectation of an early increase in the price of crude.

Lubs Active

Lubricating oils are active but not in quite so large degree as when the jobbers were taking in their supplies for the opening of the driving season. Neutrals are now firm and rather scarce, according to some of the refiners. Others say they are firm but the supply is ample for the needs of the industry. Generally the market is described as firm, with keen competition for trade. The Vacuum Oil Co. has been putting on a very active local campaign and it is noticeable there are very few garages or other places where lubricating oils are sold that do not

GASOLINE MARKET IN EAST SEEMS TO HAVE UNDERLYING WEAKNESS

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, May 15.—While on the surface the refined oil markets on the Atlantic Seaboard appeared to have undergone no change during the past week, a close investigation would tend to uncover some weaknesses, the extent of which cannot yet be clearly estimated.

Kerosene, gas oil and fuel oil appear to be the strongest products. The situation as to gasoline and lubricating oils, however, is not so clear.

While gasoline consumption is holding up fairly well, the gain in this territory during May as compared with the same month of 1925 is reported not to be up to the March and April gains. This is due partly to unfavorable weather.

The situation as to gasoline is not so much due to consumption, however, as to supply. Cracking practice and the continued heavy supply of crude from current production and storage are combining to keep output well up to consumption, and one significant feature, according to one student of the situation, is that this has been accomplished without any abnormal drain on the Mid-Continent Field.

The fact is that most of the Atlantic Seaboard marketers, who supply a gallonage which is large enough to turn the oil situation one way or another, apparently are obtaining all of the additional crude and gasoline they require from California and Mexico, and these fields, if any, are getting the real benefit of the increase in demand.

Since the beginning of 1926 they have been gradually increasing their purchases of both California and Mexican oil, while their demands on the Gulf or Mid-Continent producers and refiners have been not more than half-hearted. The crux of the situation is that the Mexican crude and California gasoline have been obtainable on relatively more favorable terms to Atlantic Coast buyers than the Mid-Continent products, freight and other factors taken into consideration. On whether this situation will continue for another three months or not will decide the future course of oil prices throughout the country, for in that period the biggest demand for oil will take place.

Tankwagon Situation

The situation as to gasoline outlined above is believed to be the underlying cause in back of the present price situation in this territory. There have been several tankwagon advances in recent weeks, imparting a strong spirit of optimism in the trade. On the other hand, with the higher tankwagon prices have come reports of increased competition on the part of the big gasoline marketers, in the form of concessions reported to be prevalent to the benefit of service station operators. All of which points to "high pressure" methods to increase gallonage.

The small competition which resulted in scattered price cutting one or two years ago is not as noticeable now, but the indirect price slashing, which benefits the service station dealer, but not the consumer, is reported to be widespread, and affecting actually a much larger gallonage than a year ago.

It is said by some of those in touch with the situation that if this competition does not disappear in the near future, open warfare will result and the tankwagon price structure may suffer accordingly.

Lubricating Oil

The lubricating oil market is showing little improvement, and in some directions real weakness is reported. In the first place, offerings of "distress" lubricating

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show a display of the product of the company and signs announcing the sale of its oils. Several garage men have told the writer that the public is willing to pay the price of better oils than they were formerly.

Some refineries advanced their prices on lubricating oils a cent a gallon but the movement was not met by others.

There was a meeting of a number of distributors of lubs who are members of the N. P. M. A. this week, but it was a private meeting and the only statement was that the attendance was confined to a few large distributors and that it was for the purpose of considering the proposed line of lubricating oils to be sold by its members under the brand of the organization. There are many difficulties inherent to the plan, but the members who have studied the situation see no unsurmountable obstacles and many advantages in having a uniform line of motor and industrial lubricants under the brand of the organization to be sold by the members at all their stations. The display advertising of the organizations now mentions not only gasoline but lubricating oil and other products as well.

KANSAS FIELDS

(Continued from Page 50)

Co. has spudded No. 2, NE cor. NW NW, Section 12-22-10. Syndicate Oil Co. has spudded No. 4, NW cor. NE NW, Section 12-22-10. White Eagle Oil Co. is drilling at 535 feet in No. 3, NW cor. SE NW, Section 12-22-10. Titus and others have a rig up for No. 4 Prather, CWL NW SW NW, Section 29-22-10. Tidal Oil Co. has completed No. 14, CEL NE SW NW, Section 29-22-10. Sand was 2,320-70 feet and the well made 150 bbls. after a shot of 80 quarts; No. 3, CEL NE, Section 30-22-10, made 135 bbls. after a shot of 120 quarts in sand 2,450-89 feet. Skelly Oil Co. has completed No. 3, NE cor. NW NW, Section 1-23-9, for 65 bbls. from sand 2,430-52 feet after a shot of 50 quarts.

Thrall Pool

In the Thrall Pool, Roth & Faurot's No. 1, NW cor. NW, Section 15-23-10, made 25 bbls. from sand 2,169-82 feet. Pure Oil Co.'s No. 7, CWL NW, Section 26-23-10, 25 bbls. after shot of 80 quarts, 2,245-93 feet.

Empire's No. 6 Bartlett, NE cor. SE SE, Section 15-22-11, is a rig. York State Oil Co.'s No. 11-C DeMalhourie, SE cor. NW NW, Section 32-22-11, is a rig; and No. 9 O'Neill, SW cor. NW SE, Section 32-22-11, is drilling at 750 feet. Mississippi Valley Oil Co. has a machine in for No. 1 Kussman, NW cor. SW NW, Section 2-22-12; Simmons and others have a rig up for No. 6 Frankhouser, NE cor. SE NW, Section 4-22-12. Simmons and others' No. 3 Frankhouser, NW cor. NE SW, Section 4-22-12, is a rig. The Texas Company's No. 2 Frankhouser, SW cor. NW NE, Section 4-22-12, is a rig. Phillips Petroleum Co.'s No. 1, SW cor. NW SW, Section 5-22-12, made 20 bbls. from sand 1,850-97 feet and was shot with 130 quarts. Prairie Oil & Gas Co. has a rig on the ground for No. 1 Ames, NE cor. SE, Section 5-22-12. Simmons and others' No. 1, NW cor. NE SW, Section 28-22-12, dry and abandoned at 1,955 feet. Pure Oil Co. has a machine in for No. 3 Oliver, SW cor. NE SE, Section 8-23-13. Mid-Continent Petroleum Corp. has the rig up for No. 9 Shadel, C W half SW, Section 15-23-13, Roth & Faurot have rigged up No. 1 Walch, NW cor. NE, Section 13-25-8. Manhattan Oil Co. has a rig on the ground for No. 1 Freeman, NE cor. SW NE, Section 19-24-11. Ritchie, Moore and the White Eagle Oil Co. have spudded No. 2, NW cor. SW SE, Section 19-24-11. Ward McGinnis has a rig for No. 5-C Wiggins, SE cor. NE NW, Section 30-24-11. J. K. Davis' No. 1, SE cor. NE, Section 17-24-13, is dry at 1,728 feet. Smith Wahn and others are drilling at 550 feet in No. 2, NE cor. NW NE, Section 27-26-9. Frank Swift has a rig on the ground for No. 1 Edwards, SE cor. NW, Section 7-26-10.

Sumner County

Amerada Petroleum Co.'s No. 1 Hamilton, SW cor. SE NE, Section 18-35-1, is a new rig.

Cowley County

Smith & Ash have spudded No. 1 Newton, NW cor. SW SW, Section 15-30-5. Trees Oil Co. has a rig on the ground for No. 3 Lewis, NE cor. NW NE, Section 28-31-4, and No. 5, SE cor. NW SE, Section 10-31-3, is completed for 30 bbls. in sand 3,040-3,058 feet. Roxana Petroleum Corp.'s No. 2, SW cor. SE, Section 16-34-3, is dry and abandoned at 3,442 feet.

Butler Country

Empire Gas & Fuel Co. is drilling at 450 feet in No. 11 Pirtle, C SE NE, Section 19-25-5; No. 88 Hegburg, C NE, Section 28-25-5, is drilling at 850 feet; No. 33 Stokes, NE cor. SW SW, Section 28-25-5, is drilling at 700 feet.

In the Towanda district the Magnolia Petroleum Co.'s No. 4 Skair, SW cor. NW SW, Section 25-7-4, is drilling at 400 feet. Empire Gas & Fuel Co. has completed No. 9, NW cor. SE SE, Section 35-27-4, for 100 bbls. naturally in sand 2,518-27 feet.

Harvey County

Sinclair Oil & Gas Co. has a rig on the ground for No. 1 Boyle, NW cor. SW NW, Section 17-24-3w.

Reno County

Mississippi Valley Oil Co. has a rig and tools in for No. 1, C NE Section 36-24-7w. Patton, Stearn & Streeter have spudded No. 1, C SE, Section 9-25-7w.

Kingman County

Fleeger and the White Eagle Oil Co. have a rig on the ground for No. 2 Graber, NW cor. NE, Section 34-27-7w. Phillips Petroleum Co. is building a rig for No. 1 Schulte, SW cor. NE NW, Section 21-29-9w.

Barber County

Rollins and others have spudded No. 1 Pickens, NE cor. NW NE, Section 27-30-14w.

Russell County

Sparks & Hayworth have a dry hole in No. 1, NW cor. NW, Section 16-11-17w, which is abandoned at 3,575 feet. In the Russell Pool T. C. Johnson has completed No. 7, SE cor. NE NW, Section 5-12-15w, for 100 bbls. natural in sand 2,808-13 feet. Mid-West Company's No. 16, SE cor. NW NW, Section 8-12-15w, had sand 2,928-68 feet and made 95 bbls.; No. 18, SW cor. NW NW, Section 8-12-15w, is good for 150 bbls. in sand 2,910-59 feet.

GASOLINE MARKET IN EAST SEEMS WEAK

(Continued from Page 192)

oil on the Atlantic Coast have been reported in the last few days. No doubt this is partly due to the secondary cause, that of smaller "smoke-stack" demand for lubs.

As a result of the situation, prices of both cylinder stocks and red and pale oils have not more than held their own so far this year, despite the fact that the season of big consumption and of active business is here.

Slowing down in many important industrial lines is reported by jobbers of lubricating oils, and the attitude of their own customers has impelled a cautious attitude toward buying from refiners, especially with regard to prices. Substantial concessions are being asked, but refiners are still hesitant to yield because of a possibility of a change for the better in the near future.

Paraffin Wax

Paraffin wax is showing the same tone as lubricating oils. A tendency toward weakness is apparent. However, prices have held steady so far.

Petrolatum

The petrolatum market shows no improvement, according to the best reports obtainable. Business is on a hand-to-mouth basis.

Kerosene

Continued strength in kerosene is traceable to the same causes already outlined—cracking and big domestic and export demand. Reflecting this is an advance of 1 cent a gallon in the price of furnace oil for use in home oil burners.

Gas oil continues firm.

Diesel oil is also firm, but bunker fuel oil has lapsed into a dull state which promises no important price change for the time being.

The Export Market

The major portion of the British strike seems to have been settled without having made more than temporary effect on petroleum. A gain in gasoline consumption during the strike was reported, and this is continuing, and is expected to continue, so long as railroad transportation is hampered.

No bulk oil shipments to England from New York have been reported during the last week. The movement of all important export products held up well, however, a feature being petroleum asphalt.

Another bulk shipment of crude, the second in three weeks, was reported.

Petroleum Exports

The following table shows principal exports of petroleum and petroleum products from New York reported during the last three weeks (figures in gallons unless otherwise noted in parentheses):

	Week Ended—		
Gasoline:	May 12	May 5	Apr. 28
Bulk	2,750,824	5,468,318	.....
Barrels	126,350	.....	.....
Cases	1,932,000	1,433,730	1,602,740
Kerosene:			
Bulk	645,597	1,858,337	1,405,017
Cases	2,604,380	919,180	800,660
Turpentine substitute:			
Bulk	.....	174,373	.....
Gas oil:			
Bulk	.....	344,262	195,659
Fuel oil:			
Bulk	.....	.....	225,304
Lubricating oil:			
Bulk	1,269,034	1,488,121	1,343,403
Barrels	1,881,100	1,263,350	2,534,150
Cases	128,240	168,240	378,820
Lubricating grease:			
Barrels (lbs.)	254,250	.....	985,050
Paraffin wax:			
Bags (lbs.)	1,413,060	772,640	3,633,080
Barrels (lbs.)	839,800	.....	195,700
Petroleum asphalt:			
Barrels (lbs.)	1,823,525	2,291,400	1,992,150
Petroleum coke:			
Bags (lbs.)	.....	1,100,000	.....
Crude oil:			
Bulk	815,452	.....	1,740,067
Barrels	.....	.....	171,150

The foregoing includes shipments of 500 bbls., 1,000 cases, and more.

The oil tanker charter market was practically at a standstill during the past week.

Oil Receipts Drop

Estimated receipts of crude and refined petroleum by tanker at Atlantic ports during the week ended May 12 were 3,353,000 bbls., a daily average of 479,000 bbls., compared with 4,422,000 bbls., a daily average of 632,000 bbls., the week ended May 5.

Receipts from the Gulf Coast totaled 2,030,000 bbls., a daily average of 290,000 bbls. Receipts from California totaled 393,000 bbls., a daily average of 56,000, while imports totaled 930,000 bbls, a daily average of 133,000 bbls.

Of the imports, 731,000 bbls., or 104,000 bbls. daily, were from Mexico, while 199,000 bbls., a daily average of 29,000 bbls., were from South America.

Petroleum Receipts

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from the Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 12 months (figures in barrels):

	Week Ended—		
	May 12	May 5	Apr. 28
Gulf	290,000	397,000	358,000
Pacific	56,000	107,000	93,000
Imports	133,000	128,000	137,000
Total	479,000	632,000	588,000

Daily Averages by Months

1926:	Gulf	Pacific	Imports	Total
April	326,000	92,000	146,000	564,000
March	317,000	97,000	178,000	592,000
February	332,000	73,000	122,000	527,000
January	279,000	59,000	96,000	434,000
1925:				
December	298,000	56,000	103,000	457,000
November	259,000	36,000	92,000	387,000
October	249,000	36,000	102,000	387,000
September	306,000	66,000	76,000	448,000
August	291,000	54,000	90,000	435,000
July	391,000	63,000	107,000	561,000
June	379,000	66,000	118,000	563,000
May	312,000	81,000	145,000	538,000

The foregoing estimates are based on the carrying capacity of incoming oil-laden tankers.

TEXAS GAS FRANCHISE

OKLAHOMA CITY, Okla., May 15.—The city council at Wichita Falls has declined to pass upon the application of the Upham Gas Co. for a franchise until the matter has been submitted to the people and has called a public meeting for June 9. The company reported it had placed an issue of $4,000,000 of bonds to finance a pipe line from the Shamrock Gas Field. D. A. Upham, president of the company, says much of the pipe is on the ground and laying it will start at once. The company expects to distribute gas also at Vernon, Chillicothe, Electra, Iowa Park, Childress and Quanah, all in Texas.

GAS DRILLERS BUSY AROUND CLEVELAND, O.

By Vern T. Whitney

CLEVELAND, Ohio, May 15.—Drillers are rushing to Cleveland's western fringe once more. Ten years of quiet followed the West Park oil boom, but drilling rigs again are hurrying into action near Lorain Road, this time 5 miles farther out, on Hall Road, North Olmsted village.

Sinking of some gas wells this spring with 3,000,000 to 4,000,000 feet production daily has stirred speculators and contractors to activity not seen around Cleveland in a decade. Six crews were working yesterday, and at least three more are to start this week, one of them today.

Development is almost entirely in the hands of the professionals, although three of the wells are "stocked out,"—owned by stock companies. Holes cost around $8,000. The East Ohio Gas Co. and the Logan Gas Co. are paying 15 cents per 1,000 feet for the gas. That would make the best wells worth up to $600 a day.

According to J. W. Irwin, proprietor of the Ohio Pipe & Supply Co., who is starting to deepen a well for L. F. McGrath, the region would be completely leased except that some of the owners are uncertain whether to go after gas or subdivide their land in real estate allotments.

Most of the land is held in small acreage and this has resulted, Irwin says, in more wells being put down than normally should go in such a field. Drillers are making a pepper box on both sides of Hall Road, with the probability, Irwin said, that the field will not last many years.

Beside the berry patches and over the blossoming apple and pear orchards all kinds of rigs are rearing their heads—derricks of steel and wood and lighter masts. Crews work 12-hour shifts, day and night, and the cough of their gas engines and the creak of their walking beams break in on a once quiet countryside. Rig builders are being recruited from the Medina and Wooster fields and a scarcity exists.

Hulse has two wells drilling, one on the J. P. Deubel farm, 800 feet deep yesterday and the other on the Nellie Hoag place. He has a third location ready on the James Jenkins farm. Hulse is associated with Theador Kundtz, vice president of the White Sewing Machine Co., in ownership of the wells. One of his wells, of 3,000,000 feet, was connected to the gas line two weeks ago.

H. A. and W. J. Dempsey have given a contract for a well on the F. J. Inch farm to Clyde Dougherty of Medina, Ohio. Work will be commenced at once.

J. C. Arthurs has three strings of tools now drilling on the Glascow, Miller and Reeves farms. W. H. Reeve, one of the lessors, owns the Reeve Cleaning & Dyeing Co.

J. W. Cushing, contracting for the Wiser Oil Co., is starting to spud on the Nichols tract. The Logan Gas Co. is drilling on the Artley farm.

MEXICAN REPORT ON OIL

According to the Mexican News Bureau, one of the first results of the promulgation of the regulations for the enforcement of the new petroleum law has been a notable stimulation of production and exportation as shown by the increase in tax receipts. The February tax collection total was $1,397,041.69 against March collection of $1,861,828.86.

Issue Important Patent on Cracking

Covers Method By Which Clean Circulation is Obtained in Holmes-Manley Process of The Texas Company

By L. M. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, May 18.—The Holmes-Manley-Behimer patent No. 1,585,496 was issued today by the United States Patent Office. The record date for the disclosure is the filing date of the application Serial No. 263,562, filed November 21, 1918.

The patent is of particular interest as it underlies the development of the Holmes-Manley process, developed by The Texas Company which has for years carried out extensive cracking operation through its use. In disclosing the features of tubular heating and clean circulation, the filing of the application nearly eight years ago is regarded as significant in the cracking field.

The patent reviews the methods of cracking prior to 1918 and sets forth important improvements in the art which have become associated with best practices of today. The object of the inventors was to develop a commercial continuous cracking process whereby the oil could be treated at a comparatively low temperature yet sufficient to produce effective cracking and at the same time enable the production of an easily refined distillate. They realized the necessity of avoiding excessive decomposition attending the treatment of oil at the higher temperature, which is now generally known to result in the production of an unstable distillate with corresponding treating problems, and the importance of either insulation or surrounding it with a heated atmosphere when desirable to permit an economy of operation and construction. This important step was evolved for the purpose of reducing the hazard attending the transfer of heat through still walls which might be subjected to carbon deposition;

The elimination of tar from the circulating system by drawing the residual oil from the chamber thus minimizing the carbon formation in the heating element where it must be deposited if reintroduced;

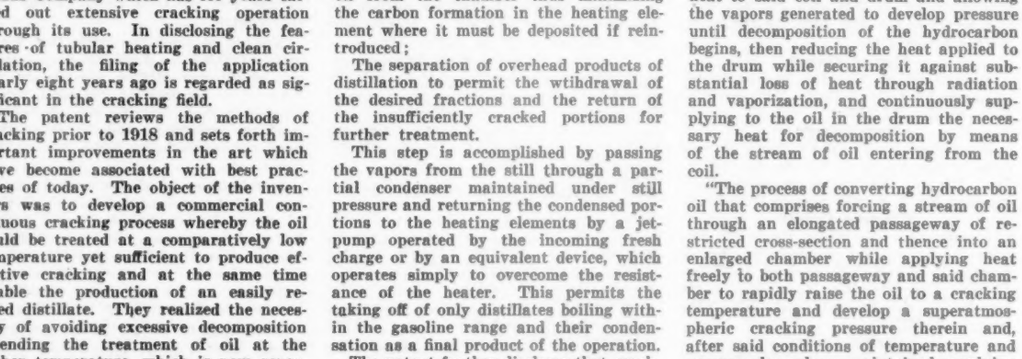
The separation of overhead products of distillation to permit the wtihdrawal of the desired fractions and the return of the insufficiently cracked portions for further treatment.

This step is accomplished by passing the vapors from the still through a partial condenser maintained under still pressure and returning the condensed portions to the heating elements by a jet-pump operated by the incoming fresh charge or by an equivalent device, which operates simply to overcome the resistance of the heater. This permits the taking off of only distillates boiling within the gasoline range and their condensation as a final product of the operation.

The patent further discloses that cracking is not only a function of temperature but of time and that if the oil is rapidly heated in the described tubular elements, vaporization, and continuously supplying to the oil in the drum the necessary heat for decomposition by means of the stream of oil entering from the coil, the stream entering the coil being continuously commingled with a hot condensate separated out from the generated vapors.

"The process of converting hydrocarbon oil which comprises forcing said oil through a coil and drum while applying heat to said coil and drum and allowing the vapors generated to develop pressure until decomposition of the hydrocarbon begins, then reducing the heat applied to the drum while securing it against substantial loss of heat through radiation and vaporization, and continuously supplying to the oil in the drum the necessary heat for decomposition by means of the stream of oil entering from the coil.

"The process of converting hydrocarbon oil that comprises forcing a stream of oil through an elongated passageway of restricted cross-section and thence into an enlarged chamber while applying heat freely to both passageway and said chamber to rapidly raise the oil to a cracking temperature and develop a superatmospheric cracking pressure therein and, after said conditions of temperature and pressure have been maintained, applying to said enlarged chamber reduced or moderate heat sufficient only to maintain a cracking temperature in said chamber ing the starting period to rapidly establish cracking conditions of temperature and pressure therein, then continuing the maintenance of said conditions during the period of normal cracking operation by heating the oil in said drum at a reduced and moderate rate while continuing to freely heat the oil in the coil, removing the vapors from the distillation drum, and separating out and returning to the heating coil the condensed heavier fractions thereof."



Diagrams showing main features of latest Holmes-Manley patent

protecting the heating surfaces from carbon deposits to insure substantially uninterrupted operation.

These considerations led to the choice of a system in which the oil could be heated rapidly and subjected to heat and pressure for comparatively lengthy periods of time and a method which would permit the selection of insufficiently cracked distillates evolved from the operation and their return to the system for further treatment.

Chief Features

The chief features permitting the operation of such a process are:

The rapid heating of oil to the required temperature in a tubular still allowing it to react slowly in a suitable chamber where the distillation takes place;

The method of furnishing substantially all the heat required for reaction in a tube still and maintaining the required temperature in the chamber or still by the time required to impart the necessary heating of the oil is such a small portion of that required to produce substantial cracking that the carbon formation, which is almost directly in proportion to the amount of decomposition, is negligible in the heating tubes and takes place almost entirely in the reaction chamber or still where it can be handled with safety and without material interference in continuous operation.

Claims for Process

The claims made for the process are set forth as follows:

"The process of converting hydrocarbon oil which comprises forcing said oil through a coil and drum while applying heat to said coil and drum and allowing the vapors generated to develop pressure until decomposition of the hydrocarbon begins, then reducing the heat applied to the drum while securing it against substantial loss of heat through radiation and while continuing the free application of heat to said passageway.

"The process of converting hydrocarbon oil that comprises passing a stream of oil through an elongated passageway of restricted cross-section and then delivering it into an enlarged zone where a body of oil is maintained, freely heating the oil in said passageway and in said enlarged zone during the starting period until cracked conditions of temperature and pressure are established, and subsequently continuing the free heating of the oil in said passageway but applying to the body of oil in said enlarged zone a reduced and moderate amount of heat sufficient to offset losses and to maintain a cracking temperature therein throughout the period of normal operation.

"The process of converting hydrocarbon oil that comprises freely heating a moving stream of oil in its passage through a heating coil and distillation drum dur-

ITALIAN REGULATIONS ON COMBUSTIBLE OILS

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 17.—The characteristics that must be possessed by raw mineral oils in order to be considered as destined for direct use as a combustible, and by the residues from the distillation of mineral oils in order to be considered as destined for use as a combustible and in the calcium cyanamid industry, and the regulations governing the exemption from duty granted in these cases, are established in a recent decree of the Italian Ministry of Finance, according to the Foreign Tariffs Division of the Department of Commerce.

According to the decree, raw material oils, in order to enter as combustible, under section A, Item 643, of the import tariff, must satisfy the following conditions: (a) be viscous of bituminous aspect, of black color; (b) have a specific gravity of not less than 0.900 at the temperature of 15 degrees centigrade; (c) not contain more than 20 per cent, by weight of distilling products up to the temperature of 510 centigrade; (d) must be subjected to all the customs regulations, mentioned elsewhere in the decree, designed to verify that they are to be exclusively and directly used as combustible.

The residues from the distillation of mineral oils, in order to enter as combustible or raw material in the calcium cynamid industry, under Item 644, must: (a) not be capable of service either for illuminating or as lubricant for machinery; (b) have a density not less than 0.850 at the temperature of 15 degrees Centigrade; (c) have a black color, or at least a brown or reddish one (d) observe all the customs regulations designed to verify their declared purpose.

EFFECT OF PLACING GRADE B ON GRAVITY

HOUSTON, Tex., May 15.—The action of the pipe lines in placing grade B on a gravity basis is a great importance to refiners in this territory. About 50 per cent of the gross production in these pools was classed as B grade and the price ruled 25 cents under Grade A until the recent change was announced. Oil grading as B is found in every pool, but in such districts as Pierce Junction and Blue Ridge practically all the output came under the head of B grade.

Rated according to gravities, starting with 25 degrees and below at $1.40, the bulk of the grade B production is marketed at from $1.45 to $1.55. The percentage running between 33 and 35 degrees is very small, so that it can be said that A and B are practically upon a parity as far as revenue is concerned.

Grade A goes into the making of lubricants and B is cracked under pressure, yielding a fair percentage of gasoline which is worked up into valuable motor fuel.

ROCKY MOUNTAIN FIELDS

(Continued from Page 60)

north and south from the Fort Collins Field shortly after the Union of California brought in its first well there.

Salt Creek Completions

The Midwest Refining Co. brought in 14 new wells the past week in the Salt Creek Field. Two of these are Lakota sand producers and one was drilled into the sand, making 2,350 bbls. on a 24-hour test while the second well was shut down on top of the sand.

The Midwest Oil Co. drilled in a Lakota sand well on Section 35-40-79, finding the Lakota sand at 2,490 feet and the well made 2,350 bbls. natural. The same company also drilled a Lakota well to the top of the sand on Section 26-40-79 to a depth of 2,397 feet and shut down. The same company drilled in a second Wall Creek well on Section 11-40-79 at 2,123 feet and will shoot.

The Wyoming Associated Oil Co., on Section 35-40-79, has a producer good for 20 bbls. at 1,393 feet, also on Section 26-40-79, the same firm has a producer good for 50 bbls. at 1,500 feet. The same company on Section 14-40-79, has a nominal producer at 1,476 feet.

The Midwest Oil Co. and the Wyoming Associated Oil Co., drilling jointly, brought in four wells together. On Section 36-40-79, the companies have a producer good for 68 bbls. at 1,244 feet and another on the same section at 1,706 feet that will make a small pumper. On Section 13-40-79, the same firms have a second Wall Creek sand well good for 20 bbls. at 2,100 feet, also on Section 25-40-79, they brought in a producer at 1,681 feet that will have to be shot and pumped.

Mountain & Gulf Oil Co. completed four new wells in Section 13-40-79, all second Wall Creek sand. The depths were 2,109, 2,025, 2,220 and 2,372 feet. All four will be shot before placing on production.

The purchasing companies operating in the Salt Creek Field posted an increase of 25 cents for Salt Creek crude effective May 15. This brings the price of crude to $2.37 for the highest gravity.

Utah Developments

The Cane Creek well of the Midwest Refining Co. and the Utah Southern Oil Co. on the Colorado River, south of Moab, is still trying to get a water shut-off. Some reports had the well flowing, but this is stated to be wrong as the hole has been mudded to prevent flows. The second test being drilled by the Midwest Refining Co., about 5 miles south of the discovery well is at 782 feet and making hole fast.

The Gypsy Oil Co. on the Carbonera Dome found the Dakota sand at 3,192 feet and gas, is now drilling at 3,217 feet after mudding off the gas which is estimated at 20,000,000 feet.

The Utah Oil & Refining Co. has arranged to drill the Cisco structure where a big gasser was found last year, and deliver the gas to manufacturers of carbon black.

Runs from the Fields

Salt Creek	51,690
Teapot	1,370
Big Muddy	3,500
Grass Creek	2,900
Elk Basin	640
Greybull	55
Rock River	2,850
Lance Creek	1,780
LaBarge	150
Poison Spider	680
Osage	350
Hamilton Dome	1,160
Lander	250
Byron	30
Lost Soldier	4,470
Ferris	50
Simpson Ridge	300
Cat Creek	2,800
Lake Basin	170
Sunburst	15,000
Florence	360
Moffat	3,585
Tow Creek	105
Fort Collins	2,550
Iles Dome	110
Rattlesnake, N. Mex.	185
Hogback, N. Mex.	450
Artesia, N. Mex.	3,000
Boulder	25
Rangeley	100
Total	100,565

Total Rocky Mountain Field Production for April

Salt Creek	1,623,420
Teapot	39,530
Big Muddy	103,350
Grass Creek	86,100
Elk Basin	18,230
Greybull	1,180
Rock River	91,780
Lance Creek	58,430
LaBarge	5,000
Poison Spider	13,539
Osage	10,500
Hamilton Dome	36,100
Lander	7,700
Byron	900
Lost Soldier	128,340
Simpson Ridge	6,300
Ferris	1,470
Cat Creek	88,550
Sunburst	601,000
Lake Basin	5,030
Florence	11,200
Moffat	89,250
Iles Dome	2,425
Fort Collins	82,075
Boulder	750
Tow Creek	3,235
Rangeley	3,000
Hogback	13,550
Rattlesnake	7,915
Artesia	90,000
Miscellaneous	1,505
Total	3,231,404

CRUDE PRICES IN MANY FIELDS ARE INCREASED

(Continued from Page 39)

On Saturday, May 15, Gulf Coast crudes were given a general 10-cent advance. This made Grade A crude $1.60 per barrel, and Grade B from $1.50 to $2.05 per barrel. The Magnolia Petroleum Co. posted a 10-cent advance on Mirando, Texas, crude. Calliham, Texas, crude was also increased a dime.

Louisiana-Arkansas

The Grayburg Pipe Line Co., which buys Somerset, Texas, crude, advanced its postings from 5 to 25 cents on all grades, effective Monday.

Following the advances in other districts, the Standard Oil Co. of Louisiana, Tuesday raised all Arkansas and Louisiana crudes, except Smackover, Cotton Valley and Bellevue, 25 cents. Smackover and Cotton Valley were boosted only 10 cents, while there was no change at Bellevue. Urania crude, posted by the Louisiana Oil & Refining Corp. was unchanged.

The Indian Refining Co. also advanced western Kentucky crudes 25 cents a barrel, effective Tuesday, following the increase Monday by the Paragon Development Co. in Cumberland, Barren and Monroe County crudes of 20 cents.

Advance a Surprise

The increase in the price of crude came as a surprise to many producers, especially in the Mid-Continent fields, and in Kentucky. In the Trenton Rock fields of Ohio and Indiana, where producers have been rocking along with little profit this year and with a record of direct loss last year it was most welcome, yet unexpected. Back in the old Central West Field it was felt that as long as California, Texas and Oklahoma continued to bring in new fields, as they have been doing, there was not much hope for crude advances until later in the year.

The big purchasing companies with a better inside knowledge of general industrial conditions suddenly realized that the time was ripe for a rise. The Panhandle Field in Texas with its meager transportation facilities was discounted so far as this year is concerned and there was nothing else in sight to warrant the belief that the country would overproduce in the near future. The sudden rush of summer weather all over the land which manifested itself early in the month caused a tremendous increase in the consumption of gasoline. Every major company in the Mid-Continent Field had been drawing on crude stocks, some of them since early in the year. The Prairie, which two weeks ago considered that the time was not ripe for an increase in the price suddenly saw its way clear to advancing the market. There was no hesitancy on the part of any of the other oil buying companies in meeting the new schedule.

TRY COMPRESSED AIR IN IOWA PARK POOL

WICHITA FALLS, Tex., May 17.—Attention of operators in the older semi-shallow fields in all west Texas is centered in the old Iowa Park shallow pool where preparations for the putting of depleted wells on compressed air to increase production are nearing completion.

This will be the first instance in a Texas field where this method, which has recently had rapid expansion in northern Oklahoma and Kansas fields, has been employed. The first permit for operations of this kind was granted by the Texas Railroad Commission to the Western Oil Corp., G. W. Lackey and Houghland Brothers of Wichita Falls.

TECHNICAL QUESTIONS

(Continued from Page 44)

oil with kerosene or a distillate, then, after settling puts the mixture through a process similar to the regular refining process. This includes neutralization acid treating, distilling and filtering.

Removal of the lighter products, such as kerosene, could be accomplished by distillation, reducing the oil to a satisfactory flash point.

AMERICAN OIL COMPANY EXTENDING STATIONS

By Charles E. Kern
Washington Bureau
The Oil and Gas Journal

WASHINGTON, D. C., May 15.—Activities of the American Oil Co. of this city, with general offices in Baltimore, Md., is attracting considerable attention in that this company is extending its system of oil stations.

The American Oil Co. recently purchased the properties and the business in the Pittsburgh district of Transcontinental Oil Co. This includes not only the two bulk plants and the large chain of retail service stations within Pittsburgh proper and vicinity, but also includes like properties in other towns such as Charleston, W. Va., Follansbee, W. Va., Mars, Pa., Greenville, Pa. and Steubenville, Ohio.

It is understood that $1,000,000 worth of property is involved in the transaction. Transcontinental Oil Co. has operated in the Pittsburgh district for a number of years, but recently decided to withdraw from the tankwagon and retail business in the Pittsburgh district and to concentrate such marketing efforts to points closer to its Oklahoma refineries.

In addition to the Transcontinental properties, the American Oil Co. takes over all the rest of the Transcontinental equipment in the territory. About two years ago the American Oil Co. purchased the properties and business of the Y-Co Motor Fuel Co., of Pittsburgh, and since that time the American Oil Co. has been actively marketing its products in Pittsburgh. It has also established branches in other towns in the Pittsburgh area.

The purchase of the Transcontinental properties will largely augment the American Oil Co.'s facilities in Pittsburgh and surrounding towns. In Pittsburgh alone the American Oil Co. will now have three bulk plants and 25 retail service stations.

The taking over of the branch at Steubenville, Ohio, is the first step by the American Oil Co. in invading the Ohio territory with its own stations. about two and one-half years ago the largest deal in the history of the Baltimore oil industry was closed, when the Pan-American Petroleum & Transport Co. and its subsidiary, Mexican Petroleum Corporation, acquired a half interest in the American Oil Co. Even before this affiliation the American Oil Co. intensively covered a good area with necessary ocean terminals and branches and service stations and equipment.

Since then the American Oil Co. has purchased several dozen oil companies in different sections and has established many new branches. Recently it purchased the bulk station and service stations of the Indian Refining Co. in Charlotte, N. C.

For some time this company has been selling its products in tank cars within North Carolina, but the Charlotte, N. C. purchase was the first move whereby it began distribution through its own stations within the State.

It is also locating an ocean terminal in Wilmington, N. C., to which point its products will be brought by tankers, and from which they will be shipped in tank cars to the various bulk stations to be located throughout North Carolina.

Agreements were also signed a few days ago whereby the American Oil Co., will, within a few weeks, take over the properties and business of the Nonpareil Oil Co., Atlantic City, N. J. This, in addition to a bulk station, includes eight retail service stations.

NAVARRO COUNTY SUIT REHEARING GRANTED

AUSTIN, Tex., May 17.—There was submitted to Section B, Commission of Appeals a case of interest to oil companies and oil leaseholders in Texas, styled Humble Oil & Refining Co. vs. Woods, from Navarro County. The same question was decided by Section A, Commission of Appeals, in Humble Company vs. Kishi and a motion for rehearing was refused, but the Supreme Court has permitted a second hearing motion to be filed in the case.

Woods owned a lease which he alleged was flooded by water caused by a dam built by the Humble Company and that the Humble Company permitted the alleged wrongful act to continue; that it was impossible to drill a well on the lease because of the standing water and while it so stood a dry hole was brought in the adjoining lease and destroyed the value of his lease. He sued for damages and was awarded $900 by the trial court, which was affirmed by the Dallas Appellate Court.

The Humble Company insists that since the territory was proven dry that Woods was not entitled to damages. His answer is that he could have sold the lease at a large profit, and produced evidence to that effect, had not the standing water prevented drilling.

ITALIAN OIL IMPORTS SHOW SOME INCREASE

By Charles E. Kern
Washington Bureau,
The Oil and Gas Journal

WASHINGTON, D. C., May 15.—Italian imports of petroleum products continued to advance in 1925, although the proportion of increase was not so large. Imports for 1923 amounted to 5,630,656 metric quintals, increasing by almost 30 per cent to 7,300,742 quintals in 1924, the following year to 8,099,748 quintals, an advance of about 11 per cent.

During the past three years the values of the total imports increased from 636,849,374 lire in 1923 (about $30,000,000 at the average rate of exchange for that year) to 724,660,248 lire in 1924 (about $31,500,000) and 842,913,211 lire in 1925 (a little less than $33,000,000.)

Crude oil imports, which showed a decrease in 1924, had a considerable advance to 373,888 metric quintals in 1925, carrying the total well beyond that of 1923. Kerosene imports, which amounted to 1,176,602 quintals in 1924, had a slight decrease to 1,159,870 quintals the following year, and while there was an increase in the importation of residuum to 3,622,920 quintals in 1925, it was slight in comparison with that shown in 1924, when imports increased to 3,327,100 quintals from 1,916,366 in 1923. Imports of paraffin wax have decreased gradually throughout the three years.

The United States was the principal source of the gasoline, kerosene, lubricants, residuum and paraffin wax, and the increase of the American share of the crude oil imports was marked. Russia and the United States supplied nearly two-thirds of the crude importation of 1925, both countries showing an unusual increase over the contributions of 1923 and 1924, while Mexican crude has not appeared on the records since 1923.

While the total paraffin wax imports has had a marked decrease, and imports from America decreased in 1925, it is noticeable that Belgian contributions of this commodity have had a steady and marked increase throughout the three years.

REFINING AND MARKETING

WESTERN REFINERS WILL MAP WEATHER

Weather as a factor in gasoline consumption in the future will receive consideration from the membership of the Western Petroleum Refiners Association. H. K. Davis, statistician of the association, will each week send the membership a map covering 11 states of the Middle West where the bulk of the gasoline output of the Mid-Continent is sold, showing weather conditions for the previous week.

This map shows conditions both as to temperature and precipitation with the rating of above normal, more than normal, about normal, less than normal and below normal. This map is to be accompanied by tables showing actual average temperatures and rainfall for the week at representative points throughout the 11 states. The normal temperature and precipitation for the same points is also given making possible a comparison between the two.

In his first report in commenting on the relationship between weather and gasoline consumption, Mr. Davis says in part:

"The effect of weather on gasoline consumption is affected by many factors such as character of soil, type of cars in use, division of motor traffic between pleasure and commercial cars, ratio of paved and unpaved roads, etc., hence there is a profitable field for research offered companies retailing gasoline at specific points where detailed data regarding temperatures, precipitation and volume of gasoline sales are available. However, without such research there are certain combinations that are well known to have certain, but not definitely measured, influence on gasoline demand. For example, by referring to our weather map, it will be noted that during the week ending May 7 temperatures over all of Iowa, with the exception of the region around Keokuk, was above normal, while there was less than the usual amount of rainfall. A combination of this character, while unseasonable, could have no ill-effect on gasoline consumption regardless of the character of either motor traffic or highways.

"We believe the data we present should prove of value in an analysis of market demand, also that a running record of the prevailing weather will frequently disclose that rumors of unseasonableness should be greatly discounted and in some instances ignored.

HAWKEYE DEAL OFF

CHICAGO, May 17.—It was stated at the office of the Cosden Sales Corp. that negotiations for the purchase of the distributing business of the Hawkeye Oil Co. of Waterloo, Iowa, had been dropped by the Mid-Continent Petroleum Corp. The decision was reached at a conference held at the eastern office of the corporation in New York City.

WILL OPEN CLEVELAND OFFICE

CHICAGO, May 17.—Hughes & Co., large distributors of fuel oils of all kinds with offices in this city, have arranged to open offices in Cleveland in the Williamson Building with A. E. Adams in charge. Mr. Adams was formerly with the American Petroleum Products Co. of this city.

MICHIGAN MARKETERS MEET

The regular summer meeting of the Michigan Independent Oil Mens Association will be held July 15 and 16 at the Grand Hotel, Mackinac Island, according to an announcement by James Gilmore, field secretary of the association. A program for the two-day meetings is now being prepared.

NATURAL GASOLINE MANUFACTUURE REACHES RECORD IN CALIFORNIA

LOS ANGELES, Calif., May 15.—The natural gasoline manufacturing industry in California has started off 1926 in a very auspicious manner and it looks as though this year will be a banner one. A new record was established in January when a total of 22,142,921 thousand feet of natural gas was treated within the confines of the state, and, although there was a very slight decline in February, the amount of gas treated in March was only a little less than the new record. Approximately 16 per cent more natural gas was run to plants in California during the first quarter of 1926 than during the similar period of 1925. The exact figures were 64,283,321 and 55,572,120 thousand feet respectively. The oil absorption method is, of course, the most extensively used for obvious reasons and, although the ratio between this method and the combination compressor and oil absorption method was about 2 to 1 during the early part of 1925, changing conditions have resulted in a greater utilization of the oil absorption method with the result that the ratio is now nearly 3 to 1. In January, 1925, a total of 12,184,797 thousand feet of natural gas was credited to the absorption method, while 6,178,569 thousand feet were treated by combination compressor and oil absorption units. During January, 1926, the amount of natural gas treated by the absorption process increased to 13,818,495 thousand feet, while that charged against the combination compressor and absorption method declined to 4,451,142 thousand feet. The charcoal absorption method was first utilized in California during January of this year, although the combination oil and charcoal absorption plan has been in use since March, 1925.

AMOUNT OF NATURAL GAS TREATED IN CALIFORNIA, SEGREGATED AS TO VARIOUS METHODS
(Thousand cubic feet.)
By Methods

1925—	Oil Absorption	Compressor	Combinat'n Compressor and Oil Absorption	Combinat'n Oil and Charcoal Absorption	Charcoal Absorption	Total
January	12,184,797	433,283	6,178,569	.....	.....	18,796,649
February	11,106,978	393,034	5,671,742	.....	.....	17,171,749
March	12,663,321	463,842	4,116,901	2,360,658	.....	19,603,722
April	12,015,071	439,942	3,954,189	2,117,506	.....	18,526,708
May	12,452,719	458,832	4,149,670	1,994,681	.....	19,055,902
June	12,360,997	436,491	4,025,677	1,846,200	.....	18,669,365
July	11,996,572	419,770	4,917,277	1,918,454	.....	19,252,073
August	12,345,922	368,580	5,622,632	2,115,137	.....	20,452,322
September	12,133,636	450,672	5,903,043	2,184,607	.....	20,671,959
October	12,955,292	336,418	6,087,055	2,375,004	.....	21,752,769
November	13,919,971	352,648	4,610,867	2,339,374	.....	21,222,860
December	13,990,074	364,551	4,751,052	2,425,462	.....	21,521,139
Total 1925	150,125,345	4,907,064	59,987,675	21,677,133	.....	236,697,217
1926—						
January	13,818,495	389,943	4,451,142	2,477,084	1,006,257	22,142,921
February	12,552,486	355,180	3,880,508	2,191,444	1,026,721	20,006,339
March	13,797,461	537,915	4,298,577	2,300,922	1,199,186	22,134,061

GASOLINE CONSUMPTION 20 PER CENT GREATER FIRST QUARTER OF 1926

Gasoline consumption continues to show a large increase over last year, according to an announcement by the American Petroleum Institute based on State tax reports from 32 states. The March total for these states was 304,833,000 gallons or 21.9 per cent greater than in March of last year. For the three months ending March 31, the gasoline consumption of these 32 states was 870,648,000 gallons, or 20.7 per cent greater than the total of 721,219,000 gallons for the first quarter of last year.

Following is the detailed report of gasoline consumption for March by states:

GASOLINE CONSUMPTION BY STATES
MARCH, 1926

	Month of— Feb., 1926	Mar., 1926	Mar., 1925
Alabama	8,519,000	9,441,000	7,595,000
Arizona	2,379,000	2,474,000	2,085,000
Arkansas	6,755,000	6,978,000	4,930,000
Colorado	6,536,000	7,540,000	6,247,000
Delaware	1,542,000	1,286,000	1,124,000
Florida	25,913,000	28,232,000	14,696,000
Georgia	13,661,000	12,221,000	10,358,000
Idaho	1,641,000	2,537,000	1,635,000
Indiana	15,484,000	20,314,000	15,914,000
Kansas	14,061,000	18,659,000	14,957,000
Kentucky	7,239,000	6,005,000	6,049,000
Louisiana	10,195,000	9,529,000	8,196,000
Maine	1,106,000	1,140,000	1,460,000
Maryland	6,138,000	6,457,000	6,889,000
Minnesota	13,964,000	13,728,000	12,509,000
Mississippi	6,988,000	8,501,000	5,804,000
Missouri	19,355,000	22,625,000	14,951,000
Nevada	546,000	745,000	723,000
N. Hamp.	1,016,000	1,195,000	1,224,000
N. Mexico	1,493,000	1,619,000	1,637,000
N. Car'lina	14,672,000	13,482,000	15,900,000
N. Dakota	4,210,000	5,088,000	2,739,000
Oklahoma	14,817,000	15,380,000	11,437,000
Oregon	6,320,000	8,157,000	6,666,000
*S. C'r'l'a	6,225,000	6,868,000	6,128,000
S. Dakota	3,953,000	6,188,000	4,101,000
Texas	35,962,000	35,837,000	35,972,000
Utah	2,012,000	2,336,000	2,369,000
Virginia	8,012,000	10,572,000	8,679,000
Wash'g't'n	11,126,000	14,273,000	11,593,000
W. Virgin'a	3,422,000	4,376,000	4,265,000
Wyoming	977,000	1,050,000	1,189,000
Total	276,239,000	304,833,000	250,039,000
Daily avr.	9,866,000	9,833,000	8,066,000
Inc. prev. yr.:			
Amount	.....	54,794,000	.....
Pct.	.....	21.9%	.....
Dis. of Col.	3,156,000	3,908,000	3,373,000
Iowa	14,171,000	16,138,000	.....
Michigan	30,062,000	33,095,000	25,345,000
Nebraska	9,512,000	11,778,000	.....
Ohio	33,985,000	43,058,000	.....
Rh. Isl'd	2,478,000	3,276,000	.....
Wisconsin	11,598,000	12,771,000	.....

*Heretofore South Carolina figures have been those compiled according to the Inspection Laws of that State but this month they are Tax Law figures. Comparable figure for January is 6,346,000 gallons.

INDIANA COMPANY'S STOCK TO EMPLOYES

CHICAGO, May 17.—It is learned that $25,350,000 in Standard Oil Co. of Indiana stock, for which employes paid only $11,800,000, is being distributed today among 15,300 employes of the company of whom 622 are affiliated with the subsidiary, the Midwest Refining Co. With this stock in their possession, the employes will, as a group, own 4.2 per cent of the total outstanding stock of the Standard Oil Co. of Indiana.

The plan was inaugurated by the board of directors five years ago and expired March 31. For every dollar subscribed by an employe the company put in 50 cents. Under the plan the employes could subscribe a maximum of 20 per cent of their salaries. They have made a profit of 115 per cent on their investment. This large amount will be distributed to the employes over the 11 states where the company operates.

The new plan, which will run for three years, has been inaugurated to take the place of the older plan. A total of 15,722 out of 22,183, or 70.87 per cent, of the eligible employes of the company are taking part in this second stock purchase plan, which began April 1. The sales department has 8,809 participants out of 12,093 eligible; the manufacturing division has 5,189 out of 7,297, and all other departments 1,724 out of 2,811. Several departments have 100 per cent participation. An employe to participate in the new plan must retain two-thirds of his stock.

GASOLINE INJUNCTION DISSOLVED BY JUDGE

LINCOLN, Neb., May 15. — District Judge John B. Raper has dissolved the temporary injunction granted April 5 against the Standard Oil Co. of Nebraska. The injunction was granted in behalf of a gasoline dealer in Auburn, Neb., Attorney General Spillman filing the complaint.

The dealer was conducting the sale of gasoline on a $15-a-year club plan in which he furnished gasoline 2 cents above the delivered cost at Auburn. On February 16 the Standard met this competitive club price by reducing the Auburn price 5½ cents per gallon.

On April 5 Judge Raper granted a temporary injunction against the Standard company requiring it either to make the same price in other parts of the state as at Auburn or raise the price in Auburn. The Standard obeyed by raising their Auburn price to normal this week. The case was tried before Judge Raper on its merits with the result that the temporary injunction was dissolved. The judge took the issue of price discrimination under consideration and will render a decision in the near future. In the meantime the Standard is allowed to meet competition in any part of the state. The company has announced, however, that it will not change its normal prices at Auburn until the case is finally decided.

WILL ENLARGE REFINERY

CHICAGO, May 17.—At the office of James B. Berry's Sons Co. it was stated that the Ohio Oil Co. will at once proceed to greatly enlarge and improve the refinery of the Lincoln Refining Co. at Robinson, Ill. The Ohio Oil Co. purchased the plant some two years ago and has since operated it. The Ohio Oil Co. will add Holmes-Manley stills and bring the plant capacity up to 5,000 bbls. of crude daily. The total amount that will be expended in making these improvements is approximately $2,500,000. Some distribution is controlled in the vicinity of the refinery.

BOOK ON CORRISION

"Corrosion — Causes and Prevention" is the title of a new book by Frank N. Speller, director of the metallurgical department, of the National Tube Co. The book is published by the Mc-Graw-Hill Book Co., Inc., of New York. It is a useful reference book for those interested in refinery and general corrosion problems as they apply to the oil business. The book explains in detail the various phases of corrosion and its prevention. It is a complete and authoritative summary of the available information carefully classified for practical use.

ACQUIRES MORE STATIONS

CHICAGO, May 17.—It is announced here that the White Eagle Oil & Refining Co. has bought the distribution of the Westbrook Tank Line Co. of St. Paul amounting to 26 stations in Minnesota.

CUSHING PLANT RESUMES

All repairs due to the fire April 13 at the Cushing, Okla., refinery of the Cushing Refining & Gasoline Co., have been completed and the plant has resumed normal operations. The fire damaged the stills and also the tankage.

JENKINS CRACKING PROCESS

PRODUCES QUALITY GASOLINE

Facts from performance

ENDORSEMENT

Recent investigations by unbiased Refiners has resulted in an unqualified endorsement of the Jenkins Process as the most economical and modern cracking equipment.

You can obtain information from operators which will give you the facts.

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EAST CHICAGO, INDIANA

NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

Brief Items for Plant Operators

OKMULGEE SKIMMING PLANT TO BE OPERATED

The Independent Oil & Gas Co. of Tulsa within a few days will start operating the skimming plant at Okmulgee, Okla., recently purchased from the Indiahoma Refining Co. This plant adjoins the refinery which the Independent owns and has operated for the past several months and which was formerly owned by the Allied Refining Co.

The old Indiahoma plant, which was shut down for several years, has been remodeled by the new owners. The shell stills have been hooked up continuously with new towers and heat exchange equipment. The company expects to do all its skimming at this plant which will have a rated capacity of 7,000 bbls. daily.

With this skimming plant in operation the present refinery will be used as a finishing plant. The gas oil will be handled by the 1,000-bbl. Jenkins cracking unit which started operating the first of the month. The heavy residuum from the skimming plant will be taken care of by the lub plant which the company will have in operation next month. The refinery has made cylinder stocks for several years. With the new centrifuge and contact filtering equipment now being installed, the company will manufacture a complete line of lubricating stocks.

When all improvements are completed crude runs to stills will average around 3,000 bbls. daily. The company has made several changes in the pipe line gathering system which was also purchased from the Indiahoma company. Approximately 6,000 bbls. of crude are being gathered and delivered daily. Part of the oil is delivered to two refineries located at Bristow, Okla., and by tank car to buyers located outside the State.

CENTRAL LUBRICATING SYSTEM ADVANTAGES

Nine different builders of automobiles have adopted systems of central-source chassis lubrication in the last two years and between 60,000 and 70,000 cars using one of these systems have been produced in that period, asserted Fred H. Gleason at a recent meeting of the Milwaukee section of the Society of Automotive Engineers.

Satisfactory results have been obtained with systematic operation and no trouble has been experienced from breakage of the tubing or the flexible connections. The best lubrication is attained by the use of the heavier engine oils, which have great viscosity, stay in place in the bearings and prevent the entrance of either water or dirt.

Briefly, the central lubricating system is comprised of an oil reservoir carried on the dash under the hood, an oil pump that draws oil from the reservoir, a pump plunger operated by pressure of the driver's foot, or in some cases by hand, and tubing, flexible hose connections and channels in steering knuckles, wheel spindles and brake parts to carry the oil under pressure to all points on the chassis that require lubricating.

A push of thirty pounds on the plunger produces pressures on the oil of ranging from 300 to 1,000 pounds per square inch in the primary oil tubes. The quantity of oil delivered to each bearing is measured by a control device at each point.

NEW MONTANA REFINERY

The Hiline Oil & Refining Co. has been incorporated in Montana to operate a refinery. The company has purchased a site near Havre, Mont., and will shortly start the construction of a skimming plant. The plant will have an initial capacity of 250 bbls. daily.

CHEMISTS ANNOUNCE NEW THEORY AS TO CAUSE OF ENGINE KNOCKS

Compounds of lead, among the cheapest of metals, are the greatest foe of knock in automobile engines, while chlorides of gold and platinum are powerless to suppress it, a report of researches covering the whole field of antiknock materials made public by the American Chemical Society declares. A theory of detonation new to science is described.

The experiments, carried on in the chemical laboratory of Ohio State University at Columbus by William Hale Church, Edward Mack, Jr., and Cecil E. Boord, covered the whole field of antiknock materials.

The researchers determined and classified all antiknock compounds as well as compounds without effect in attacking knock in automobile engines, to eliminate which is a major effort of science.

Lead tetraethyl was found to be the most formidable of the antiknock compounds, the report said, and all comparison was based upon a value of 100 attached to this compound as "the antiknock coefficient."

Lead diphenyl dimethyl ranks second with a value of 97 and lead dipenyl diethyl third with 93.5. Lead diphenyl diiodide scored 80, lead diphenyl dichloride scored 72, and lead diphenyl dibromide 60. Lowest in the scale of antiknock compounds, the investigators discovered, was aluminum ethyl iodide, called "very weak owing to iodine content." Twenty-five compounds were classified in the report as antiknock.

Compounds Tested

Thirty-four compounds proved to be worthless in suppressing knocks. These included gold chloride, platinic chloride and nitrogen sulfide.

"None of these compounds," said the report, "exerted the slightest effect in suppressing the intensity of the explosion. Diethyl selenide even appeared to increase the loudness of the reports.

"Less than 0.1 per cent of chromium pentaphenyl bromide would be dissolved in a fuel suitable for the test. This compound would be expected to exhibit antiknock properties if larger concentrations could be tested."

The investigators offer a new theory of detonation, which attempts to explain the way in which tetraethyl lead, studies of which by Thomas Midgley, Jr., and Thomas A. Boyd, resulted in the production of ethyl gasoline, prevents antiknock.

This theory, it was pointed out, is a striking development of science because, if it proves sound, it will bring progress in the conquest of knock affecting the nation's 20,000,000 motor vehicles. Chemical science previously had shown that tetraethyl lead would suppress knock. The Ohio State researchers think they have solved the mystery of why it suppresses knock.

According to their theory, in the explosion which takes places in the gas engine tetraethyl lead decomposes suddenly into infinitesimal particles of metallic lead, which act as centers for partial burning.

These little particles themselves burn as the flame front approaches them and thus they make the flame travel faster than if they were not present. This condition is described as somewhat like that of millions of unimaginably small spark plugs that ignite the gas just ahead of the flame front.

"Thus, by virtue of the multiple centers of high temperature created by the burning of these little particles of lead," says the report, "there is initiated evenly ahead of the main flame front a partial oxidation or an auxiliary burn tending to maintain a combustion in a region of fuel which otherwise would be subject to detonation.

"The decomposition temperature of antiknock materials, taken in conjunction with the temperature of the cylinder gases, thus determines at what stage in the cycle they shall begin to function.

"If the decomposition temperature is low, partial oxidation will begin earlier in the cycle and extend throughout a larger volume of yet unburned fuel than if it is high. In the extreme of the latter

(Continued on Page 210)

AMONG THE TECHNICAL MEN

John F. Cullen, superintendent of the Laramie, Wyo., refinery of the Midwest Refining Co. is a native of California, having been born at Hollister, in 1889. He attended the public schools of that State and in 1913 graduated from the Arts College of Leland Stanford University. He majored in electrical engineering while at the university.

John F. Cullen

Mr. Cullen's first employment after leaving the university was with San Francisco telephone interests as a traffic engineer. A year and a half later he entered the California oil fields as an electrical engineer.

His employment by the Midwest Refining Co. started in 1916 and has continued up to the present time except for his services during the war with the engineering corps. His first work was with the Salt Creek natural gasoline plants. In 1917 he was placed in charge of construction in that field and in 1918 he was superintendent of a gasoline plant in Elk Basin.

His refinery experience started in 1919, when on returning from the army he was placed in charge of the construction work at the Laramie refinery. When the plant was completed in 1920 he continued as superintendent of operations and has since held that position. The refinery has a capacity of 4,000 bbls. daily with Burton cracking stills.

INSTALL GRAY TOWERS AT TWO REFINERIES

The Barnsdall Refineries, Inc., and the Kanotex Refining Co. have contracted with the Gray Processes Corp. for the installation of Gray towers used in the vapor phase treatment of cracked gasoline. The Barnsdall installation will be used in connection with the operation of Cross cracking units at its Okmulgee, Okla., refinery and the Kanotex installation will be at its Arkansas City., Kans., refinery where Jenkins cracking equipment is in operation.

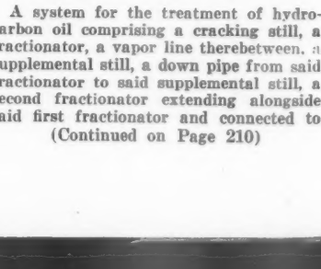
The Barnsdall Refineries, Inc., was the first company to adopt the Gray equipment, the initial unit being placed in operation at its Barnsdall, Okla., refinery about a year and half ago. At the present time 43 units are either in operation or under construction. The list of companies includes: Argentine Government Oil Fields, Inc., Barnsdall Refineries, Inc., Compagnie Belge Du Gaz Catalytique, Brussels, Belgium; Kanotex Refining Co., Lubrite Refining Co., Marland Refining Co. McColl Brothers, Ltd., Toronto, Canada; Standard Oil Co. of New York, Sun Oil Co. and White Star Refining Co.

ORDERS STEEL FOR REFINERY

CHICAGO, May 17.—The Roxana Petroleum Corp has placed an order for 7,500 tons of steel to be used in the construction of its new refining plant at East Chicago. The order is for steel to be used in the erection of tanks in its tank farm. The order was equally divided between the Graver Corporation and the Chicago Bridge & Iron Works. This is about one-half of the expected quantity of steel that will be required for the plant but the order for the latter half will be postponed until more of the advance work has been accomplished. The plan is to have the tanks ready for the storage of crude as soon as the new line from Wood River to East Chicago is completed.

Recent Patents

1,576,564. Apparatus for Distilling Hydrocarbons. Frank E. Wellman, Kansas City, Kans., assignor to the Kansas City Gasoline Co., Kansas City, Kans., a corporation of Kansas. Filed June 3, 1922. Serial No. 565,635. 1 Claim. (Cl. 196—99.)



A system for the treatment of hydrocarbon oil comprising a cracking still, a fractionator, a vapor line therebetween, a supplemental still, a down pipe from said fractionator to said supplemental still, a second fractionator extending alongside said first fractionator and connected to

(Continued on Page 210)

HUGHES LABORATORY SERVICE

The quality of Hughes Products reflects the exacting supervision of materials and processes maintained by the Hughes Laboratory Organization.

For many years Hughes Tool Company customers have benefited indirectly from this service.

We are now prepared to undertake a more direct service in the investigation of materials used in the producing and refining industry.

Complete equipment for physical and chemical analysis available.

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Export Office: New York City

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	May 18		May 11		May 4	
OKLAHOMA (Group 3)—						
50-52 450 end point	.11	.11¼	.10½	.10¾	.10½	.10¾
56-58 450 end point	.11¾	.12	.10¾	.10⅞	.11	.11⅛
58-60 450 end point	.11⅞	.12	.10⅞	.11	.11⅛	.11¼
58-60 437 end point (U. S. Motor)	.12		.11⅛	.11⅜	.11¼	.11½
60-62 400 end point	.12¼	.12½	.12	.12¼	.12¼	.12½
64-66 375 end point	.12¾	.13¼	.12⅝	.12⅞	.12¾	.13
68-70 360 end point	.13½	.13¾	.13	.13¼	.13¼	.13½
KANSAS—						
58-60 437 end point (U. S. Motor)	.12½	.12¾	.11¾	.12	.11¾	.12
NORTE TEXAS—						
48-50 450 end point (Naphtha)	.10⅝	.10¾	.10½	.10⅝	.10¼	.10½
50-52 450 end point (Naphtha)	.10¾	.11¼	.10½	.10¾	.10½	.10⅝
56-58 450 end point	.11⅝	.11⅞	.10⅝	.10¾	.10⅞	.11⅛
58-60 437 end point (U. S. Motor)	.11⅞	.12	.11	.11¼	.11¼	.11½
60 62 400 end point	.12¼	.12¼	.11¾	.12	.12¼	.12½
64-66 300 end point	.12½	.12¾	.12¼	.12⅜	.12½	
64-66 375 end point	.12¾	.13	.12½	.12¾	.12¾	.13
68-70 360 end point	.13¼	.13½	.12⅞	.13	.13⅛	.13⅜
NORTH LOUISIANA—						
56-58 450 end point	.12	.12¼	.11	.11¼	.11	.11¼
58-60 437 end point (U. S. Motor)	.12¼	.12½	.11¼	.11½	.11¼	.11⅜
64-66 375 end point	.13¼	.13½	.13	.13⅛	.13⅛	.13⅜
ARKANSAS—						
58-60 450 end point	.12¼	.12½	.11¼	.11½	.11½	.11¾
58-60 437 end point (U. S. Motor)	.12½	.12¾	.11½	.11¾	.11¾	.12
64-66 375 end point	.13¼	.13½	.13	.13⅛	.13	.13¼
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.15	.15¼	.14⅛	.14¼	.14¼	.13½
PENNSYLVANIA—						
52 Naphtha	.12½	.12¾	.12¼	.12½	.12¼	.12½
54 Naphtha	.12¾	.13	.12½	.12¾	.12½	.12¾
56 Naphtha	.13¼	.13½	.12¾	.13	.12¾	.13
58 Naphtha	.13¾	.14	.13¼	.13½	.13¼	.13½
60 Gasoline	.14½	.14¾	.14	.14¼	.13¾	.14
62 Gasoline	.15	.15¼	.14½	.14¾	.14	.14¼
64 Gasoline	.14¾	.15	.14¾	.15	.14½	.14¾
66 Gasoline	.16	.16¼	.16	.16¼	.16	.16¼
68-70 Gasoline	.19½	.20	.19½	.20	.19	.19½
CALIFORNIA—						
54-58 437 end point (U. S. Motor) domestic	.12½	.13	.12½	.13	.12½	.13
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.11	.11¼	.10¾	.11	.10½	.10¾
56-58 450 end point	.11¾	.12	.11	.11⅓	.11	
58-60 437 end point (U. S. Motor)	.12	.12¼	.11¼	.11½	.11¼	.11½
60-62 400 end point	.12½	.12¾	.12¼	.12½	.12¼	.12½
64-66 375 end point	.13	.13¼	.13	.13½	.13	
68-70 360 end point	.13½	.13¾	.13¼	.13½	.13¼	.13¾

*Colorado points.

NATURAL GASOLINE

	May 18		May 11		May 4	
OKLAHOMA (Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.10¾	.11	.10½		.10½	.11
Grade A, 72-79.9, 375 e.p., rec. 90%	.10¾	.11	.10½		.10½	.11
Grade BB, 84-92, 375 e.p., rec. 85%	.10½	.10¾	.10	.10¼	.10	.10¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.10½	.10¾	.10	.10¼	.10	.10¼
Grade C, 80-90, 375 e.p., rec. 78%	.10¼	.10½	.09¾	.10	.09½	.09¾
NORTH TEXAS—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.10¾	.11	.10½		.10½	.10¾
Grade A, 72-79.9, 375 e.p., rec. 90%	.10¾	.11	.10½		.10½	.10¾
Grade BB, 84-92, 375 e.p., rec. 85%	.10½	.10¾	.10	.10¼	.10	.10¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.10½	.10¾	.10	.10¼	.10	.10¼
Grade C, 80-90, 375 e.p., rec. 78%	.10¼	.10½	.09¾	.10	.09½	.09¾
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.11½	.11¾	.11	.11¼	.11	.11¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.10¾	.11	.10¾	.11	.10¾	.11
Grade C, 80-90, 375 e.p., rec. 78%	.10½	.10¾	.10¼	.10½	.10¼	.10½
CALIFORNIA—						
78-85 absorption, 360-390 end point	.15½	.16	.15½	.16	.15½	.16
78-84 compression, 350 end point	.15½	.16	.15½	.16	.15½	.16
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.11		.11	.11¼	.10½	.10¾
Grade A, 72-79.9, 375 e.p., rec. 90%	.11		.11	.11¼	.10½	.10¾
Grade BB, 84-92, 375 e.p., rec. 85%	.10½	.10¾	.10½	.10¾	.10¼	.10½
Grade B, 76-83.9, 375 e.p., rec. 85%	.10½	.10¾	.10½	.10¾	.10¼	.10½
Grade C, 80 90, 375 e.p., rec. 78%	.10¼	.10½	.10	.10¼	.10	.10¼

MOTOR NATURAL GASOLINE (BLENDS)

	May 18		May 11		May 4	
OKLAHOMA (Group 3)—						
60-62 450 end point	.11½	.11⅝	.11	.11¼	.11	.11¼
64-66 437 end point	.11½	.11⅝	.11¼		.11¼	.11½
NORTH TEXAS—						
64-66 437 end point	.11½	.12	.11	.11¼	.11	.11¼
PENNSYLVANIA—						
*60-62	.12¾	.13	.12¼	.12½	.12¼	.12½
*64-66	.13	.13¼	.12½	.12¾	.12½	.12¾
*66-68	.13	.13¼	.12¾	.13	.12¾	.13
*68-70	.13¼	.13½	.12¾	.13	.12¾	.13
CHICAGO DISTRICT (Based on Group 3)—						
60-62 450 end point	.11¼	.11½	.11	.11¼	.10½	.10¾
64-66 437 end point	.11½		.11¼	.11½	.10½	.11

*At Sistersville, W. Va.

BURNING OIL

	May 18		May 11		May 4	
KANSAS—						
41-43 water white Kerosene	.10¾	.11¼	.10½	.10¾	.09¼	.09⅝
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.10½	.10⅝	.10	.10½	.09	.09½
42-44 water white Kerosene	.10¾		.10¼	.10½	.09½	
NORTH LOUISIANA—						
41-43 prime white Kerosene	.10½	.10¾	.10¼	.10½	.09¼	.09½
ROCKY MOUNTAIN STATES—						
*40-41 water white Kerosene	.13½	.13⅝	.13	.13¼	.12¼	.12½
NORTH TEXAS—						
41-43 water white Kerosene	.10¼	.10½	.10		.09	.09¼
ARKANSAS—						
41-43 water white Kerosene	.10½	.10¾	.10¼	.10½	.09½	.09¾
PENNSYLVANIA—						
43 Kerosene prime white	.11¾	.12	.10¼	.10½	.09½	.09¾
45 Kerosene water white	.12¼	.12½	.10¾	.11	.10	.10¼
46 Kerosene water white	.12½	.12¾	.11	.11¼	.10¼	.10½
47 Kerosene water white	.12¾	.13	.11¼	.11½	.10½	.10¾
34 Neutral	.08	.08½	.08	.08½	.08	.08½
34 Sundebloom Neutral	.09	.09¼	.09	.09¼	.09	.09¼
36 Miners' Neutral	.07¼	.07½	.07¼	.07½	.07	.07¼
300 Mineral Seal	.09	.09¼	.09	.09¼	.08¼	.08½
CALIFORNIA—						
38-40 water white (high burning test)	.07½	.08½	.07½	.08½	.07½	.08½
Engine distillate, 43-45 445 end point	.10¼	.10½	.10¼	.10½	.10¼	.10½
Engine distillate, 42-44 450 end point	.10	.10¼	.10	.10¼	.10	.10¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.10½	.10¾	.10	.10¼	.09¼	.09½
42-44 water white Kerosene	.10¾	.11	.10¼	.10½	.09½	.09⅝

*Colorado points.

FUEL OILS

	May 18		May 11		May 4	
KANSAS—						
24-26 Fuel Oil	.1.40	1.45	.145	1.50	1.45	1.55
32-36 Gas Oil	.04⅜	.04½	.04⅜	.04½	.04⅜	.04½
38-40 Distillate	.04¾	.05¼	.04⅝	.04¾	.04⅝	.04¾
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	.1.25		1.25	1.30	1.30	
22 26 Fuel Oil (sellers' cars)	.1.27½	1.30	1.27½	1.30	1.32½	1.35
24-26 Fuel Oil (sellers' cars)	.1.35		1.35	1.40	1.40	1.42½
26-30 Fuel Oil (sellers' cars)	.1.40		1.45		1.45	1.50
28-30 Fuel Oil (sellers' cars)	.1.45	1.50	1.50	1.52½	1.50	1.60
32-36 Gas Oil (cracking stock)	.04¼		.04⅛	.04⅜	.04¼	.04⅜
36-38 Distillate	.04½	.04⅝	.04¼	.04⅜	.04½	.04⅝
38-40 Straw Distillate	.04⅝	.05	.04⅝	.05	.04⅝	.04¾
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	.1.25	1.30	1.30	1.35	1.37½	1.40
32-36 Gas Oil (straw)	.03⅞	.04	.03⅞	.04	.04	.04¼
38-40 Straw Distillate	.04⅜	.04½	.04⅜	.04½	.04⅜	.04⅝
NORTH LOUISIANA—						
18-20 Fuel Oil	.1.25	1.30	1.22½	1.25	1.22½	1.25
32-36 Gas Oil	.04	.04¼	.04⅛	.04¼	.04⅛	.04¼
ARKANSAS—						
38-40 Distillate	.04¾	.05	.04¾	.05	.04¾	.05
32 36 Gas Oil	.04⅜	.04½	.04⅜	.04½	.04⅜	.04½
16-20 Refinery Fuel Oil	.1.20	1.22½	1.20	1.22½	1.20	1.22½
GULF COAST (South Texas)—						
Gas Oil	.05	.05¼	.05	.05¼	.05	.05¼
Fuel Oil	.1.65	1.70	1.65	1.70	1.65	1.70
PENNSYLVANIA—						
30-34 Fuel Oil	.06¼	.06½	.06¼	.06½	.06⅛	.06¼
36-40 Fuel Oil	.07	.07¼	.07	.07¼	.06½	.06¾
CALIFORNIA—						
33-35 Distillate	.04¾	.05	.04¾	.05	.04¾	.05
27-35 Distillate	.04	.04½	.04	.04½	.04	.04½
15-20 Fuel Oil (at tide water)	.1.00	1.04	1.00	1.04	1.00	1.04
27 plus Diesel	.1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	.1.35		1.35	1.37½	1.40	1.45
22-26 Fuel Oil (sellers' cars)	.1.32½	1.35	1.32½	1.35	1.35	1.37½
18-22 (El Dorado)	.1.27½	1.30	1.27½	1.30	1.30	1.32½
18-20 (Smackover)	.1.15		1.15	1.20	1.12½	1.15
32-36 Gas Oil	.04⅛	.04½	.04⅛	.04¼	.04⅛	.04¼
36-38 Distillate	.04¾	.05	.04¼	.04⅜	.04¼	.04⅜
38 40 Straw Distillate	.05	.05½	.04½	.04⅜	.04⅝	.05

LUBRICATING OILS AND WAX

	May 18		May 11		May 4	
OKLAHOMA (Group 3)—						
70-80 vis., 2½ color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 3 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
100 vis., 2 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
180 vis., 4 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
180 vis., 3 color, 23-28 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 4 color, 23-28 cold test	.11	.11½	.11	.11½	.11	.11½
200 vis., 3 color, 23-28 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
220 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
220 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
240 vis., 4 color, 25 30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
280 vis., 4 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 3 color, 25-30 cold test	.16¼	.17	.16½	.17	.16½	.17
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis., 5 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
220 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 5 color, 25-30 cold test	.13	.14	.13	.14	.13	.14
280 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
Cylinder Stocks:						
180-200 vis., S. R. green, 40-45 cold test	.08½	.11	.08½	.11	.08½	.11
190-200 vis., S. R. green, 40-45 cold test	.08	.08½	.08	.08½	.08	.08½
170-190 dark green, 40 45 cold test	.06	.06½	.06	.06½	.06	.06½
190-200 vis. @ 210 "D" Bright Stock	.33	.35	.33	.35	.33	.35
200-210 vis. @ 210 "E" Bright Stock	.30	.31	.30	.31	.30	.31
150 vis. @ 210 "E" Bright Stock	.27	.28	.27	.28	.27	.28
150 vis. @ 210 "D" Bright Stock	.28	.31	.28	.31	.28	.31
Waxes:						
122-124 White Crude Scale Wax	.04¾	.04⅞	.04¾	.04⅞	.05	
PENNSYLVANIA—						
150, 3 color	.24½		.22¼		.21½	
180, 3 color	.27		.26		.26	
200, 3 color	.31		.28		.28	
220, 3 color	.30		.30		.30	
600, steam refined	.15¾		.15¾		.15¾	
635, steam refined	.19½		.19½		.19½	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

650, steam refined	.20½		.21		.21	
600, Pennsylvania flash	.26½		.28½		.26½	
630, Pennsylvania flash	.34		.34		.34	
*550, E filtered	.19½		.19½		.19½	
600, E filtered	.20		.20¼		.20¼	
*600, E filtered	.21¼		.21¼		.21¼	
600, D filtered	.26¾		.26¾		.26¾	
550, E filtered	.18½	.18¾	.18½	.18¾	.18½	.18¾
550, D filtered	.22¼	.22½	.22¼	.22½	.22¼	.22½
Pennsylvania Bright Stock	.40		.39		.39	
122-124 White Crude Scale Wax	.05½	.05¼	.05½	.05¼	.05½	.05¼
†124-126 White Crude Scale Wax	.05¼	.05⅜	.05¼	.05⅜	.05¼	.05⅜

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.07½	.08	.07½	.08	.07½	.08
No. 2½ color, 150 vis., pale oil	.10	.10½	.10	.10½	.10	.10½
No. 3 color, 200 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 3½ color, 300 vis., pale oil	.13	.13½	.13	.13½	.13	.13½
No. 3¾ color, 500 vis., pale oil	.15	.15½	.15	.15½	.15	.15½
No. 4 color, 750 vis., pale oil	.18½	.19½	.19	.20	.19	.20
No. 2 plus color, 200 vis., pale filtered	.22		.23½		.23½	
No. 2 color, 300 vis., pale filtered	.25		.27½		.27½	
No. 2½ color, 500 vis., pale filtered	.28		.31½		.31½	
No. 2½ color, 750 vis., pale filtered	.36		.41½		.41½	
No. 5 to 6 color, 200 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 300 vis., red oil	.11½	.12	.11½	.12	.11½	.12
No. 5 to 6 color, 500 vis., red oil	.13	.13½	.13	.13½	.13	.13½
No. 5 to 6 color, 750 vis., red oil	.17	.18	.17	.18	.17	.18
CALIFORNIA—						
130 pale, 2½-3 color	.10	.11½	.10	.11½	.10	.11½
200 vis., 2½-3 color	.13½	.14½	.13½	.14½	.13½	.14½
300 vis., 3 -3½ color	.15	.16	.15	.16	.15	.16
350 vis., 3½-4 color	.16½	.17½	.16½	.17½	.16½	.17½
400 vis., 3½-4 color	.18	.19	.18	.19	.18	.19
Red Neutrals:						
200 vis., 4½-5 color	.12	.13	.12	.13	.12	.13
300 vis., 5 -6 color	.13	.14	.13	.14	.13	.14
400 vis., 5 -6 color	.15	.16	.15	.16	.15	.16
500 vis., 4½-5 color	.18	.19	.18	.19	.18	.19
500 vis., 6 -6½ color	.16	.17	.16	.17	.16	.17
600 vis., 6½ plus color	.17	.18	.17	.18	.17	.18

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	May 18	May 11	May 4
U. S. Motor Gasoline, 58-60 437	.14	.14	.13½
*Bunker Oil, 14-16 Be.	1.75	1.75	1.75
*Diesel Oil, New York City	2.41½	2.41½	2.41½
Furnace Oil, New York City	.11	.10	.10
Gas Oil, 28 plus	.06½	.06½	.06½
41-43 Kerosene prime white	.09¼	.09	.09

*Lighterage 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline:	May 18	May 11	May 4
58-60 Be. gravity, in cases	.28.90	.28.90	.28.90
Standard white Kerosene, in cases	.19.15	.19.15	.18.65
Water white Kerosene, in cases	.20.40	.20.40	.19.90
Export Gasoline, 64-66 Be.	.16	.15½	.16½
†Lubricating Oils (in bulk):			
Cylinder Stock, light filtered, 60 s.r.	.29	.29	.29
No. 5 Bright Stock, .897 spec. grav.	.40	.40	.40
No. 1 White Neutral, .878 spec. grav.	.35	.35	.35
Pale Oil, "25" .898 spec. grav.	.12	.12	.12
Pale Oil, "28" .892 spec. grav.	.07½	.07½	.07½
No. 3 red oil, 160 vis., 7 color	.10¾	.10¾	.10¾
No. 2 red oil, .903 spec. grav.	.11½	.11½	.11½
No. 1 red oil, .905 spec. grav., 265 vis.	.13	.13	.13
Polar red oil, .903 spec. grav., 295 vis.	.13½	.13½	.13½
Paraffin Wax:			
120-122 a.m.p., per lb.	.05⅞	.05⅞	.05⅞
125-127 a.m.p., per lb.	.06	.06	.06
130-132 a.m.p., per lb.	.06¼	.06¼	.06¼
135-137 a.m.p., per lb.	.06⅞	.06⅞	.06⅞
Petrolatum, in bbls., car load lots, per lb.:			
Amber	.03¼	.03¼	.03⅜
Light amber	.03½	.03½	.03⅝
Cream	.05½	.05½	.05¾
Lily white	.08	.08	.08
Snow white	.09¼	.09¼	.09½

†All lub prices in barrels.

LOS ANGELES EXPORT PRICES

	May 18		May 11		May 4	
Kerosene water white	.05½	.06½	.05½	.06½	.05½	.06½
U. S. Motor Gasoline, 54-56 437 e.p.	.11	.11¼	.11	.11¼	.11	.11¼

CRUDE OIL PRICES

OKLAHOMA, KANSAS AND NORTH TEXAS

***Prairie Oil & Gas Co.**

(Oklahoma, Kansas and North and East Central Texas)

28° to 28.9°	$1.65
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° to 37.9°	2.37
38° to 38.9°	2.45
39° to 39.9°	2.55
40° to 40.9°	2.61
41° to 41.9°	2.69
42° to 42.9°	2.77
43° to 43.9°	2.85
44° to 44.9°	2.93
45° to 45.9°	3.01
46° to 46.9°	3.09
47° to 47.9°	3.17
48° to 48.9°	3.25
49° to 49.9°	3.33
50° to 50.9°	3.41
51° to 51.9°	3.49
52° and above	3.57

*Other major purchasers except as noted below.

Champlin Refining Co.
(Garber and Tonkawa)

Schedule based on Prairie Oil & Gas Co. paying 10 cents additional for each grade of crude above 38° gravity.

Humble Oil & Refining Co.
(North and East Central Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Big Lake and Lytton Springs)

Same prices as Prairie Oil & Gas Co. schedule.

Magnolia Petroleum Co.
(Oklahoma, Kansas and North and East Central Texas, except Corsicana heavy, and Lytton Springs of South Central Texas)

Below 28°	1.30

Other grades same as Prairie Oil & Gas Co.

Iatan	$1.15
Corsicana heavy	1.25

(Panola County)

34° to 34.9°	$1.70
35° to 37.9°	1.85
38° and above	2.00

Texhoma Oil & Refining Co.
(Wichita Falls, Tex., District)

Below 32°	1.94
32° to 32.9°	2.02
33° to 33.9°	2.10
34° to 34.9°	2.18
35° to 35.9°	2.26
36° to 36.9°	2.34
37° to 37.9°	2.42
38° to 38.9°	2.50
39° to 39.9°	2.60
40° to 40.9°	2.66
41° to 41.9°	2.74
42° to 42.9°	2.82
43° to 43.9°	2.90
44° and above	2.98

TEXAS PANHANDLE

Kay County Gas Co.
Magnolia Petroleum Co.

28° to 28.9°	$1.35
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50
32° to 32.9°	1.55
33° to 33.9°	1.60
34° to 34.9°	1.65
35° to 35.9°	1.70
36° to 36.9°	1.75
37° to 37.9°	1.80
38° to 38.9°	1.85
39° and above	1.90

GULF COAST

***Humble Oil & Refining Co.**

Grade A	$1.60
Grade B—	
Below 25°	1.50
25° to 25.9°	1.55
26° to 26.9°	1.60
27° to 27.9°	1.65
28° to 28.9°	1.70
29° to 29.9	1.75
30° to 30.9°	1.80
31° to 31.9°	1.85
32° to 32.9°	1.90
33° to 33.9°	1.95
34° to 34.9°	2.00
35° and above	2.05
Sour Lake (36° gravity) (The Texas Company)	1.79
Boling	1.50
High Island	1.40

*And other major purchasers, including The Texas Company, and the Sun Oil Co. High Island crude posted by the Sun Oil Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

***Magnolia Petroleum Co.**

Luling (contract)	$1.20
Mirando (Webb, Jim Hogg and Zapata Counties)	1.25
Rockdale-Minerva (Milam County)	1.25
Thrall	1.00
Calliham (Live Oak and McMullen Counties)	1.75
‡Lockhart (Lytton Springs)	

Somerset (Grayburg Pipe Line Co.)

28° to 28.9°	1.25
29° to 29.9°	1.35
30° to 30.9°	1.71
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.20
36° to 36.9°	2.29
37° to 37.9°	2.37
38° and above	2.45

*Texpata Pipe Line Co. and Humble Pipe Line Co. also posts in Mirando Field paying same prices as Magnolia Petroleum Co.

‡Lockhart prices same as for North and East Central Texas. Lockhart posted by Magnolia Petroleum Co. and Humble Oil & Refining Co.

ARKANSAS AND NORTH LOUISIANA

Standard Oil Co. of Louisiana

Caddo below 32°	2.10
32° to 34.9°	2.25
35° to 37.9°	2.35
38° and above	2.45
Homer Below 31°	1.85
31° to 32.9°	2.00
33° to 34.9°	2.10
35° and above	2.20
Haynesville below 33°	2.00
33° and above	2.10
El Dorado below 33°	2.00
33° to 34.9°	2.10
35° to 36.9°	2.20
37° and above	2.30
Bull Bayou, 32° to 34.9°	1.95
35° to 37.9°	2.10
38° and above	2.25
Cotton Valley	1.20
DeSoto	2.30
Crichton	2.10
Bellevue	1.50
Smackover, below 24°	1.10
24° to 24.9°	1.35
25° to 25.9°	1.40
26° to 26.9°	1.45
27° and above	1.50
*Stephens, Ark., below 26°	1.30
26° and above	1.50
†Calion (East El Dorado)	.95
§Urania	1.30

Other companies posting in these fields are: Gulf Pipe Line Co.; Atlantic Oil Producing Co. in Homer, Haynesville, El Dorado and Smackover; The Texas Company in Caddo, Bull Bayou, DeSoto, Crichton and Smackover.

*Posted by the Atlantic Oil Producing Co. †Posted by the Gulf Pipe Line Co. §Posted by the Louisiana Oil Refininig Corp.

ROCKY MOUNTAIN STATES

Ohio Oil Co.—Midwest Refining Co.

Rock Creek, (Wyo.)	$2.25
Salt Creek—	
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° and above	2.37
Big Muddy	2.25
Mule Creek	1.75
Grass Creek, light	2.40
Grass Creek, heavy	.90
Elk Basin	2.40
Lance Creek	2.40
Rex Lake	1.45
Osage	2.40
Lost Soldier (contract)	1.35
Greybull-Torchlight	2.15
Hamilton Dome	1.35
Cat Creek (Mont.)	2.40
Sunburst (Mont.)	1.05
Florence (Colo.)	1.60
Artesia	1.95
Hogback (N. M.)	2.45

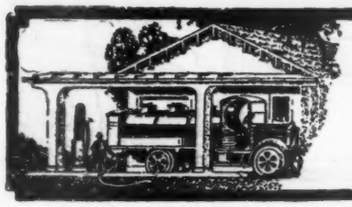
Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency

Penna Grade Oil in New York Transit Lines (New York)	$3.65
Bradford District Oil in National Transit Lines (Pennsylvania)	3.65
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.55
Penna Grade Oil in Southwest Pa. Line Lines (West Virginia)	3.50
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	3.55

(Continued on Page 206)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, May 18.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Chicago Dist.—				
†Less than 100 gals.	19.0	21.0	...	15.5

Tank wagon prices on April 19, 1922; g. up 1½c; May 8, up 1c; June 27, g. and k. up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 16, g. down 1.4c; Dec. 20, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c, k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c, k. up 1c; April 16, 1926, k. up 1c; April 24, 1926, k. up ½c; April 29, 1926, g. up 1c, k. up ½c; May 6, 1926, k. up ½c May 17, g. and k. up 1c.

Decatur, Ill.	19.2	20.2	...	16.0
East St. Louis.	18.1	20.35	...	18.0
Joliet	19.4	21.4	...	16.2
Peoria	19.2	21.2	...	16.0
Quincy	19.2	21.2	...	15.5
Davenport, Ia.	21.5	23.5	2.0	16.4
Des Moines	21.5	23.5	2.0	16.4
Keokuk	21.5	23.5	2.0	16.4
Sioux City	21.0	23.0	2.0	16.0
Duluth, Minn.	22.5	24.5	2.0	17.1
Minneapolis	22.2	24.2	2.0	18.1
La Crosse, Wis.	22.2	24.2	2.0	16.6
Milwaukee	21.1	23.1	2.0	15.8
Madison	21.2	23.2	2.0	16.0
Detroit, Mich.	21.8	23.8	2.0	16.7
Grand Rapids	21.7	23.7	2.0	16.6
Saginaw	21.9	23.9	2.0	16.8
Evansville, Ind.	22.6	24.6	3.0	16.0
Fort Wayne	22.4	23.4	3.0	16.4
Indianapolis	23.2	26.2	3.0	16.1
South Bend	22.4	24.4	3.0	16.4
Fargo, N. D.	22.9	24.9	1.0	19.1
Huron, S. D.	22.5	24.5	3.0	17.6
Sioux Falls	22.0	24.0	3.0	17.1
*K. C. Mo.	21.9	23.9	3.0	14.8
*Springfield	21.8	23.8	3.0	15.7
*St. Louis	20.6	22.9	2.5	15.5
*St. Joseph	20.5	21.5	2.5	15.4
‡Wichita, Kan.	19.8	21.8	2.0	15.4
Bartlesville, Ok.	20.8	22.8	3.0	15.3

*State tax is 2c. Remainder is city tax.

†Quantity price on more than 100 gallons, 18.0.

‡At all Kansas points a discount of 1 cent a gallon is allowed from the tank wagon postings on dumps of 50 gallons or more.

The following monthly rebate system is effective on tank wagon schedules throughout the territory of Standard Oil Co. of Indiana: Over 750 gallons, ½c; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 6,000 gallons, 1½ cents; over 10,000 gallons, 2 cents. If quantity bought during the year is equal to 12 times the monthly agreed purchases the discount will be paid or credited on the entire quantity less monthly payments. Service station customers will receive discount of 1 cent a gallon on purchases amounting to 200 gallons a month or 2,400 gallons a year; and 2 cents a gallon on 600 gallons a month or 7,200 gallons a year.

SOUTHWESTERN DISTRICT

***Magnolia Petroleum Co.**

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Dallas, Tex.	16.0	19.0	1.0	13.0
Fort Worth	19.0	20.0	1.0	13.0
Houston	19.0	21.0	1.0	13.0
San Antonio	19.0	19.0	1.0	13.0
El Paso	19.0	19.0	1.0	14.0
Texarkana	21.0	24.0	4.0	13.5
Muskogee, Ok.	18.0	21.0	3.0	15.0
Oklahoma City.	18.0	21.0	3.0	15.0
Tulsa	20.0	23.0	3.0	15.0
Little Rock	20.0	23.0	4.0	15.0
Ft. Smith, Ark.	20.0	23.0	4.0	15.0

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, ½ cent; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cents; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases as in the tank wagon discounts.

In Texas a flat 3-cent discount only from the retail schedule is allowed dealers and large consumers.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
*New Orleans	18.5	21.5	3.0	14.0
Alexandria	18.0	21.0	2.0	15.0
Baton Rouge	17.0	21.0	2.0	13.5
LaFayette	18.0	21.0	2.0	14.5
Lake Charles	18.5	21.5	2.0	15.0
Shreveport, La.	17.0	20.0	3.0	14.0
Memphis, Tenn.	20.0	23.0	3.0	16.0
Chattanooga	22.0	25.0	3.0	16.5
Knoxville	22.0	25.0	3.0	17.0
Nashville	21.0	24.0	3.0	17.0
Bristol	22.5	25.5	3.0	16.5
Little Rock, Ark	20.0	23.0	4.0	15.0

*Tax of 3 cents includes city tax of 1 cent.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Atlanta, Ga.	24.0	27.0	3.5	19.0
Augusta	24.0	27.0	3.5	19.0
Macon	24.0	27.0	3.5	19.0
Savannah	22.0	24.0	3.5	17.0
Birm'gham, Ala	21.0	24.0	2.0	18.5
Mobile	20.0	23.0	2.0	17.0
*Montgomery	23.0	25.0	3.0	19.5
Clarkedale, Miss	22.0	25.0	4.0	16.5
Jackson	22.0	25.0	4.0	16.5
Natchez	21.5	24.5	4.0	16.0
Vicksburg	21.5	24.5	4.0	16.0
Jack'ville, Fla.	22.0	25.0	4.0	17.0
Miami	24.0	27.0	4.0	18.5
Pensacola	20.0	23.0	4.0	17.5
Tampa	22.0	25.0	4.0	17.0
Covington	23.0	26.0	5.0	18.0
Louisville	24.0	27.0	5.0	17.0
Lexington, Ky.	24.0	27.0	5.0	18.0

*In addition to the state tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosene.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Atlantic City	18.0	....	...	16.0
Newark, N. J.	18.0	20.0	...	16.0
Annapolis, Md.	20.0	....	2.0	16.0
Baltimore	20.0	23.0	2.0	16.0
Cumberland	20.0	23.0	2.0	16.0
Washington	20.0	23.0	2.0	16.0
Danville, Va.	22.5	....	4.5	16.0
Norfolk	22.5	25.5	4.5	16.0
Petersburg	22.5	....	4.5	16.0
Roanoke	22.5	25.5	4.5	16.0
Richmond	22.5	25.5	4.5	16.0
Charleston, W. Va.	21.5	24.5	3.5	16.0
Keyser	21.5	....	3.5	16.0
Parkersburg	21.5	24.5	3.5	16.0
Wheeling	21.5	24.5	3.5	16.0
Charlotte, N. C.	22.0	26.0	4.0	16.0
Hickory	22.0	....	4.0	16.0
Mt. Airy	22.0	....	4.0	16.0
Salisbury	22.0	....	4.0	16.0
Charleston, S.C.	23.0	26.0	5.0	16.0
Columbia	23.0	26.0	5.0	16.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Albany, N. Y.	20.0	....	...	17.0
*New York	20.0	....	...	17.0
Buffalo	20.0	....	...	17.0
Rochester	18.0	....	...	17.0
Syracuse	20.0	....	...	17.0
Boston, Mass.	20.0	....	...	17.0
Providence, R.I.	21.0	....	1.0	17.0
Augusta, Me.	23.0	....	3.0	17.0
Manchester, N. H.	22.0	....	2.0	17.0
Burlington, Vt.	22.0	....	2.0	17.0

*Price in steel barrels.

Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
*Pittsburgh, Pa.	19.0	24.0	...	17.0
*Philadelphia	19.0	24.0	...	17.0
*Scranton	19.0	24.0	...	17.0
*Allentown	19.0	24.0	...	17.0
Altoona	19.0	24.0	...	17.0
*Erie	19.0	24.0	...	17.0
Dover, Del.	21.0	24.0	2.0	17.0
Wilmington	21.0	24.0	2.0	17.0
Springf'd, Mass.	20.0	23.0	...	18.0
Worcester	20.0	23.0	...	18.0
Boston	20.0	23.0	...	18.0
Providence, R.I.	21.0	23.0	1.0	18.0
Hartford, Conn.	22.0	25.0	2.0	18.0
New Haven	22.0	25.0	2.0	18.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
All Ohio points	22.0	24.0	2.0	17.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Omaha	21.25	23.25	2.0	16.0
McCook	22.75	24.75	2.0	17.5
Norfolk	21.75	23.75	2.0	16.5
North Platte	22.75	24.75	2.0	17.25
Scottsbuff	22.25	24.25	2.0	16.75

CALIFORNIA

***Standard Oil Co.-Union Oil Co.**

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Dominguez Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.76	.86	....	.75	.75	.85
16°	.90	.85	.76	.85	....	.75	.75	.85
17°	.94	.85	.76	.85	....	.75	.75	.85
18°	.98	.86	.76	.86	....	.75	.75	.85
19°	1.04	.87	.75	.87	....	.75	.75	.85
20°	1.10	.89	.82	.90	.89	.79	.78	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.85	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.05	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.38	1.16	1.21	1.01	1.23
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.05	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.73
33°	1.93	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.85
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 3—Whittier and La Habra crudes, 14 to 32 degrees; Montebello, 14 to 30 degrees.

Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 32 degrees; Lost Hills and Belridge, 14 to 34 degrees.

Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.

Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Denver, Colo.	21.0	21.0	2.0	18.0
Pueblo	21.0	23.0	2.0	18.0
Casper, Wyo.	21.5	23.5	2.5	16.5
Cheyenne	22.5	24.5	2.5	18.0
Butte, Mont.	24.0	24.0	2.0	20.0
Helena	26.0	28.0	3.0	20.5
Salt Lake, Utah	26.0	28.0	3.5	19.0
Boise, Idaho	27.0	29.0	3.0	21.0
Albuquerque, N. Mex.	25.5	28.5	3.0	21.0

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
San Francisco	18.0	22.0	2.0	15.5
Los Angeles	16.5	20.5	2.0	15.5
Fresno	18.5	22.5	2.0	17.5
Reno, Nev.	23.5	27.5	4.0	19.0
Portland, Ore.	19.0	23.0	3.0	16.5
Seattle, Wash.	18.0	22.0	2.0	16.5
Spokane	22.0	26.0	2.0	20.5
Tacoma	18.0	22.0	2.0	16.5
Phoenix, Ariz.	25.0	28.0	3.0	21.5

CRUDE PRICE CHANGES

May 15—Prairie Oil & Gas Co. advanced all grades of Mid-Continent crude 25 cents. The advance was met by the Sinclair Crude Oil Purchasing Co., the Humble Oil & Refining Co., Magnolia Petroleum Co. and other purchasers. In addition Magnolia Petroleum Co. advanced crude below 28 gravity 10 cents. Champlin Refining Co. advanced its posted schedule 25 cents each grade, maintaining a price 10 cents above the Prairie Oil & Gas Co. Kay County Gas Co., Magnolia Petroleum Co. and other purchasers of Panhandle, Texas, crude revised schedules in that district to include 12 grades with an advance of 10 to 25 cents. Humble Pipe Line Co. and other purchasers advanced all Gulf Coast crudes 10 cents. Humble, Magnolia Petroleum Co. and other purchasers advanced Mirando crude 10 cents. Magnolia advanced Corsicana heavy 10 cents.

May 16—Texhoma Oil & Refining Co. revised prices for crude in the Wichita Falls, Texas, district, making the new postings 5 cents above the Prairie Oil & Gas Co. schedule.

May 17—Midwest Refining Co. advanced Salt Creek, Osage, Cat Creek and Hogback (Rocky Mountain States) crude 25 cents. Ohio Oil Co. advanced Elk Basin, Grass Creek light, Big Muddy, Lance Creek, Rock Creek, Mule Creek, Rex Lake, Artesia and other crudes purchased in the Rocky Mountain States 25 cents. The same company advanced middle western crude, including Lima, Indiana, Illinois, Princeton, Plymouth, and Waterloo, 25 cents, and Wooster 20 cents. Joseph Seep Purchasing Agency advanced Cabell, Somerset medium and Somerset light 20 cents. Paragon Development Co. advanced Barren, Cumberland and Monroe County crudes in Kentucky 20 cents. Grayburg Pipe Line Co. advanced Somerset, Texas, crude 5 to 25 cents. Imperial Oil Co., Ltd., advanced Canadian crudes 25 cents.

May 18—Standard Oil Co. of Louisiana advanced all grades of Louisiana and Arkansas crude, except Smackover, Cotton Valley and Bellevue crude, 25 cents. Smackover and Cotton Valley advanced 10 cents. Bellevue unchanged. Indian Refining Co. advanced western Kentucky crude 25 cents.

TANKWAGON CHANGES

May 10—Continental Oil Co. advanced the tankwagon price of gasoline 1 cent and the service station 3 cents at Pueblo, Colo.

May 12—Standard Oil Co. of Kentucky advanced kerosene 1 cent throughout its territory.

May 17—Standard Oil Co. of Indiana advanced tankwagon and service station prices of gasoline 1 cent except in South Dakota where they were raised one-half cent. At Huron, the price was cut one-half cent. Kerosene prices were advanced 1 cent generally. Standard Oil Co. of Nebraska advanced gasoline and kerosene 1 cent. Standard Oil Co. of Ohio advanced tankwagon and service station prices of gasoline and kerosene 1 cent. Magnolia Petroleum Co. advanced tankwagon and service station prices of gasoline 1 cent at Tulsa. Atlantic Refining Co. advanced kerosene 1 cent.

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New Jersey Gross Earnings a Record

Assets at New High With An Increase of 10 Per Cent in Past Year. Operations in All Departments Reviewed

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, May 17.—Oil securities were active and firm during the past week despite heavy selling in the rest of the list, especially motors. Atlantic Refining, Skelly Oil and Lago Petroleum were features.

A notable feature of the annual report of the Standard Oil Co. of New Jersey for 1925 was the record gross earnings of $1,122,682,610, this item being made public for the first time in the company's history. After all expenses, depreciation, depletion, Federal taxes, net amounted to $111,231,355, equivalent after preferred dividends to $4.72 a share (par $25) earned on $514,706,025 outstanding common stock. This compares with $81,016,570, or $3.30 a share, on $507,301,775 stock in 1924.

The balance sheet of the company shows total assets as of December 31, 1925, amounting to $1,369,170,371, a high record, and an increase of $124,230,316, or almost 10 per cent.

Balance sheet of the Standard Oil Co. of New Jersey and affiliated companies as of December 31, 1925, compares with the close of 1924 as follows:

Assets	1925	1924
*Real est., plant and equipment	$ 514,312,310	$ 474,960,207
Investments	108,361,044	172,737,095
Govt. and other marketable securities	50,753,422	.....
Inv't. in misc. property	5,680,232	.....
Inventories	294,231,375	239,102,341
Accts. receivable	384,055,959	347,011,656
Cash	11,776,029	11,128,756
Total	$1,369,170,371	$1,244,940,055
Liabilities		
Preferred st'k	$ 199,972,900	$ 199,972,900
Common stock (par $25)	514,706,025	507,301,775
Accts. payable	275,062,077	245,936,938
Res. for taxes	16,022,713	8,850,459
Ins. reserves	14,181,775	4,617,018
Res. for annuities	.....	3,751,575
Surplus	349,224,881	274,509,390
Total	$1,369,170,371	$1,244,940,055

*After depreciation and depletion.

Detailed comparisons of the earnings statement and balance sheet with other years are difficult, due to the revised construction of the figures.

The following table shows the company's condition:

Current Assets	1925	1924
Inventories	$294,231,374	$239,102,341
Accts. receivable	384,055,958	347,011,656
Cash on hand	11,776,029	11,128,757
Gov't. and Mkt. Sec.	50,753,422	68,562,683
Total	$740,816,783	$665,805,437
Current Liabilities		
Accts. payable	$275,062,077	$245,936,938
Income tax res.	16,022,712	8,850,459
Insurance res.	14,181,775	4,617,018
Total	$205,266,564	$259,404,415

Account of Operations

The annual reports gives an unusually detailed account of the company's operations in all departments during 1925. It is signed by George H. Jones, chairman of the board of directors, and Walter C. Teagle, president. It follows:

"The dissolution in 1911 left the company with a daily crude oil production of 10,000 bbls. and a daily refinery requirement of more than 100,000 bbls. Trade conditions and the growth in the petroleum business made it advisable for the company to increase the resources of crude under its control, not only in the United States, but more particularly in foreign countries, where no open market for crude existed and where it had previously established extensive marketing organizations.

Crude Oil Production

"Of its total production of 71,924,683 bbls., domestic output was 41,117,621 bbls. supplied by the Carter Oil Co., Standard Oil Co. of Louisiana, Humble Oil & Refining Co., Hope Construction & Refining Co. and East Ohio Producing & Refining Co.

"Its gross foreign production totaled 30,807,062 bbls., which was obtained through affiliated companies, operating in Peru, Colombia, Mexico, Rumania, Poland, Canada and the Dutch East Indies.

"The company's geologists are in many parts of the world. Extensive exploration and development work was prosecuted last year in Venezuela, Boliva and the Argentine. With the completion of facilities for the transportation from tidewater of crude production developed through subsidiaries in Colombia and the Dutch East Indies, production from these two countries during the present year will materially increase.

"Substantial expenditures over a long period of time are required to develop a commercial production of crude oil in foreign fields. The company has invested in recent years in such exploration and development large amounts of capital, most of which has not yet reached a productive stage.

$45,000,000 Spent in Colombia

"Development of commercial production in Colombia, financed by a subsidiary, and the construction of a pipeline to tidewater, financed by American and European investors, represented a total outlay of more than $45,000,000 before exports of oil were possible. Large sums have been invested in other foreign fields. These expenditures were met by the allocation to this purpose of a substantial part of each year's earnings. It is the opinion of the board that these investments will prove remunerative.

"The company's domestic pipeline system comprises 2,156 miles of main trunk line, which during the past year transported and delivered 86,538,652 bbls. of crude oil.

"At the close of the year the company owned and operated under the American flag 35 tank steamers of 439,000 tons and by foreign subsidiaries 47 vessels of 440,000 tons. The year was marked by new low freight rates for all services, generally averaging about 20 per cent below those of the preceding year. The company installed Diesel engines in 16 new vessels already in service or under construction and it is proposed to convert vessels of the existing fleet from steam to Diesel power.

Big Refining Capacity

"Of the 139,000,000 bbls. of oil processed at the company's refineries in 1925, an average of 317,764 bbls. of crude a day was run in domestic plants and an average of 63,503 bbls. a day in refineries operated in Canada, South America, Mexico and Europe.

"The outstanding of development of the year in the refining department was the application of new processes and practices to the manufacture of petroleum products. This advance in scientific refining resulted in a general improvement in the quality of our products, lower operating costs and greater unit capacity.

"The construction of a refinery was begun at Palembang, Sumatra, to be in operation by end of this year.

"The company produced last year a total of 2,200,000 bbls. of natural gasoline from the operation of natural gasoline plants.

"It has been necessary in certain localities to devote a larger amount of capital to the installation of pumps and tanks than is justified by the volume of domestic distributing business. Overproduction of gasoline in recent years has encouraged uneconomic competition in the gasoline business. This multiplication of facilities, offering various brands of gasoline, completely answers the allegation that the industry is under the domination of any interest, or group of related interests.

"The demoralizing effects of the war are still felt in European markets, where the consumption of refined oil has been reduced more than 50 per cent of the pre-war figure. During the past year there has been a substantial increase in export sales of gasoline and it seems probable a substantial increase in this important market may be expected.

"The company through seven subsidiary natural gas companies supplied natural gas direct to 547,893 domestic consumers and 756 industrial consumers located in 180 towns and cities. In addition, some of those companies sold gas at wholesale to other distributing companies. The total volume of gas delivered last year was 89,062,758,000 cubic feet, the equivalent in heat value of 4,453,138 tons of coal.

$246,827,643 Oil Inventory

"Inventories of crude and finished products as of December 31, 1925, were valued at $246,827,643, out of a total of inventories and merchandise item of $294,231,374.

"Total dividend payment of $13,998,103 on the preferred stock and $20,395,991 on the common stock constituted 31 per cent of the year's net earnings. In the same period income and property taxes at home and abroad absorbed $26,485,791, equal to 24 per cent of net earnings. The company's tax bill was equivalent to the payment of $1.30 for every dollar paid to the holders of its common stock.

"At the close of the year there were 28,236 holders of the common stock and 35,627 holders of the preferred. On February 24, the trustees of the stock acquisition plan distributed to 16,358 employes a total of 884,002 shares of common stock. One-third of the holders of common stock are employes.

"Current conditions existing in the in-

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stocks—	Par	Clos. Quot. May 17	Clos. Quot. May 10	1926 High	1926 Low	1925 High	1925 Low	1924 High	1924 Low
Amerada Corp.	..	*24	..	26¼	21⅝	..	..	..	..
Atlantic Ref., com.	100	117⅝	115½	116½	97	117½	95⅛	140½	78½
Barnsdall "A"	25	24½	25	33½	26	33½	18⅝	29½	14
California Pet., com.	25	32¼	32½	33½	30⅝	34⅝	23⅞	29	19⅞
General Petroleum	25	61⅜	59⅜	65⅜	51⅛	59	42	45	38⅝
Houston Oil	100	57	*58	73	50¾	85	59	82½	61
Independent Oil & Gas	..	25½	23⅜	34	20¼	41⅜	13½	16⅛	5⅜
Indian Refining	10	10¼	9⅝	13⅜	9½	14¼	5⅛	7	3⅝
Lago Oil & Trans.	..	20⅜	..	19⅝	19¼	..	..	..	..
Louisiana Oil	10	14⅞	14	19⅝	12	23⅜	13⅜	..	..
Maracaibo	..	21¼	22	28⅜	20⅝	25½	20⅝	37¼	25⅝
Marland	..	56⅜	54⅜	60¼	49¼	60¼	32⅝	42	29
Mexican Seaboard	..	7⅛	7⅜	12⅛	6	22½	9	26⅜	14½
Mid-Continent Pet.	..	30½	30⅝	41	28⅝	38	25⅜	40½	22⅝
National Supply	50	59½	*59	65⅜	55⅛	71	54⅜	72½	54
Oil Well Supply	25	*30¼	30¼	36	30½	38	33⅜	..	..
Pan. Amer. P. & T., com.	50	66⅛	65	76⅛	56⅛	83⅞	59½	65	44½
Pan. Amer., Western B.	..	37⅝	38⅛	46	34	49⅜	37½	..	..
Phillips Pet.	..	45⅛	44¼	45⅛	42½	47⅜	36¼	42½	28½
Producers & Refiners	50	12¼	12⅜	17⅛	11	32⅝	12½	43½	29⅝
Pure Oil, com.	..	26⅜	26½	31	26	33⅝	25½	30¼	20
Royal Dutch, N. Y., sh.	13.40	52½	50⅝	57⅝	50	57⅝	48¼	59½	40⅜
Shell Transport	10	42⅝	40⅝	48⅛	42	49	39⅝	42	33
Shell Union, com.	..	24⅝	24⅞	28⅛	24	28⅜	21⅝	22½	15⅜
Simms Pet.	10	19	18½	28⅝	20⅜	28½	17⅜	24	10⅜
Sinclair Consolidated, com.	..	20⅝	20⅜	24⅜	19⅝	24⅛	17	17½	15
Skelly Oil	25	34	33⅝	34⅝	27	32½	21⅜	29	17⅛
Standard of California	25	53⅞	54⅜	62¼	54	67¼	51⅛	68½	55½
Standard of New Jersey, com.	25	43⅞	44⅝	46⅜	40¼	47½	38⅜	41½	33
Sun Oil Co.	..	*32	32½	41⅝	31½	43⅞	38⅛	..	..
The Texas Company	25	50⅝	50⅜	54⅝	49	55	42⅜	45⅝	37⅝
Texas Pacific Coal & Oil	10	13½	13¼	19½	12½	23⅝	11	15¼	8¼
Transcontinental	..	3½	3½	4⅜	3	5⅜	3½	6¼	3⅜
Union Oil of California	25	44½	42⅜	49⅜	37¼	43⅝	33⅛	39	35½
Union Tank, com.	100	90	*88½	94	84½	‡134	118	132⅜	94
White Eagle Oil & Refining	..	26⅝	26⅝	29⅜	26¼	31⅝	25⅝	29⅝	23½
Standard Oils									
Anglo-American Oil	£1	*17⅝	16⅜	19⅝	16⅛	26¾	17⅛	18⅜	14⅝
Borne Scrymser	100	*231	*230	248	226	240	205	164	150
Buckeye Pipe Line	50	53	53	59½	54½	72	53½	85½	51
Chesebrough Mfg. Co.	25	*66	*66	72⅝	63	74	48¼	52½	29¼
Continental	10	20⅜	20⅜	25⅞	20¼	31⅛	21⅞	..	..
Crescent Pipe Line	25	*14	*14	16	14⅛	17½	10	20	11⅜
Cumberland Pipe Line	100	115	*111	137	110	156	128	148	108
Eureka Pipe Line	100	49½	49⅛	63⅜	50	96	61¼	105	74
Galena Signal, com.	100	20⅛	20	32½	24	68⅛	23½	69⅜	62½
Humble Oil & Refining Co.	25	64⅝	63⅜	99⅝	56	99	42½	43⅜	36
Illinois Pipe Line	100	142⅜	*143½	144	134½	154⅛	124	161	123
Imperial Oil (Ltd.)	..	35	34⅝	38⅝	32½	39¼	27¼	119	99
Indiana Pipe Line	50	64	64	67	58	84	57½	100	66
International Pet. Co.	10	31⅝	31⅞	35½	28⅜	35⅝	22½	24⅜	16⅞
National Transit Co.	12.50	16	*15½	20⅜	18	25½	16½	25⅞	20⅝
New York Transit	100	*45	*45	50	39	79	50	97	54½
Northern Pipe Line	100	*75	*75	80½	70⅝	88	67½	107½	72
Ohio Oil Co.	25	59	59	67⅜	59⅜	75¼	60	79¼	53
Penn.-Mex. Fuel	25	*17	*17	23	16¼	44	19	35⅝	27
Prairie Oil & Gas	25	54⅜	54¼	60¼	52¼	65½	45⅞	269	193
Prairie Pipe Line	100	124¼	123⅜	127	122½	129⅝	105	111	100
Solar Refining Co.	100	*197	198	212	191	259	200	240	170
South Penn Oil	25	*38	37⅝	50	40	‡197	139	176	117
Southwest Pa. Line	100	*50	*54⅜	54½	47½	84	50	89	68
Southern Pipe Line	10	*66½	67	74½	61½	103	63	100	80½
Standard of Indiana	10	64⅛	64	70⅛	61⅝	70⅝	59½	69⅝	54¼
Standard of Kansas	25	*26⅜	27	36½	25	46	30¼	50½	32½
Standard of Kentucky	25	117⅜	117	134⅝	108	137	114⅝	121⅞	101
Standard of Nebraska	100	*184	*270	363	206	270	231	262	198
Standard of New York	25	31½	31	47¼	31⅝	48⅝	40	48	37⅜
Standard of Ohio, com.	100	307	310	362	310	369	338	337½	277
Swan & Finch, com.	25	*17	*17	21	18	27	12	28	20
Vacuum Oil	25	99	97⅝	109⅝	94⅛	109½	80½	83½	50½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	84⅝	84⅛	93¾	82½	98¼	63½	67¾	56
Tide Water Associated	..	23½	..	27	21	..	..	..	..

*Bid, no sales. ‡Old stocks.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

May 17	57.63	Apr. 12	56.07	Mar. 8	55.02		
May 10	57.08	Apr. 5	56.78	Mar. 1	55.84		
May 3	57.22	Mar. 29	56.18	Feb. 20	58.23		
Apr. 26	57.39	Mar. 22	56.96	Feb. 15	57.51		
Apr. 19	55.63	Mar. 15	56.34	Feb. 8	58.96		

dustry today are not dissimilar from those which prevailed at the corresponding period of the last few years. The causes underlying this annually recurring situation are increased activity in drilling operations under the stimulus of higher crude prices, an influx of new capital (the effect of which was multiplication of the effort and facilities) and the failure to realize the influence of improved manufacturing processes in reducing the volume of crude necessary to meet gasoline demand."

South America Arrives

In a financial way, South America is rapidly assuming an important role in petroleum affairs.

The listing on the New York Stock Exchange of the shares of the Lago Oil & Transport Corp. will undoubtedly serve to focus attention still more on the "South American oils," which have for about a year attracted considerable attention on the curb market.

Lago Oil & Transport is, indirectly, a subsidiary of the Standard Oil Co. of Indiana, through Pan American Petroleum & Transport. Developments in the company's affairs to date give evidence of it becoming one of the principal Venezuelan oil properties, balanced in every way, similar to International Petroleum, Ltd., in Colombia.

The company produced 4,500,000 bbls. of oil in 1925, and expects to take out between 9,000,000 and 10,000,000 bbls. this year. It has terminal facilities, tankers and is adding to its refining facilities by enlarging its topping plant from 2,500 to 4,000 bbls. a day.

The International Petroleum Co., Ltd., controlled indirectly by the Standard Oil Co. of New Jersey, expects to make its first oil tanker shipment from Cartagena, Colombia, in June. From then on there will be three important South American oil exporting countries—Peru, Venezuela and Colombia, with total combined exports of between 20,000,000 and 30,000,000 bbls. a year.

Sinclair Consolidated

Directors of the Sinclair Consolidated Oil Corp. have voted to apply part of the current year's earnings to the redemption of outstanding bonds. As an initial step, the corporation will call for redemption on June 31, 1926, at 103 and accrued interest, $2,500,000 first lien collateral 6 per cent bonds, Series C, with uncancelled stock purchase warrants attached. The corporation will also call for redemption on July 16, 1926, at par and accrued interest, all bonds of this series now outstanding, the appertaining stock purchase warrants to which have been exercised. In addition, the corporation will until further notice purchase at par and accrued interest, at its executive offices, 45 Nassau Street, New York, any bonds of this series the appertaining stock purchase warrants to which have been exercised.

Dividends

The Anglo-American Oil Co. has declared an interim dividend of 2s. 6d. a share, or 19 per cent, making a total of 10 per cent for the year.

The Royal Dutch Co. has declared a final dividend of 13 per cent, while the Shell Transport & Trading Co. declared a final of 12½ per cent.

The Standard Oil Co. of Nebraska has declared an extra cash dividend of 50 cents a share and an initial dividend of $1.25 a share on the new $25 par value stock, payable June 1 to stockholders of record May 24.

Previous to the payment of 50 per cent in stock on May 6, and reduction in par value to $25, resulting in 6 to 1 exchange for old $100 par value shares, the company paid $5 semiannual dividend, and an extra dividend of $10 in cash was paid December 21, 1925. The initial declarations on the new stock are equivalent to $10.50 a share on the old $100 par stock.

Quarterly Reports

Mid-Continent Petroleum Corp. for the quarter ended March 31, 1926, reports net income of $2,854,259, after interest, abandoned wells, etc., but before depreciation and depletion, comparing with $3,694,890 in the first quarter of 1925.

The condensed consolidated statement of earnings of the Simms Petroleum Co. for the first quarter of 1926 reports earnings before depletion, depreciation, abandonments and development were $889,212.83, of $1.30 a share, and net income after all charges amounted to $125,728.48 or $.18 a share. These earnings do not include appreciation on unsold inventory oil.

The Pan American Western Petroleum Co. and subsidiaries report for the quarter ended March 31, 1926, net profit of $810,036 after expenses, interest, etc., but before depreciation and depletion. The consolidated income account for the quarter ended March 31, 1926, follows:

Gross earnings	$5,424,647
Operating expenses	4,062,617
Balance	$1,362,030
Other expenses, interest, etc.	551,994
*Net profit	$ 810,036

*Before depreciation and depletion.

The Shell Union Oil Corp. and subsidiaries report for the quarter ended March 31, 1926, net profit of $5,495,891 after expenses, depreciation, depletion, etc., but before Federal taxes, equivalent, after preferred dividends, to 52 cents a share earned on 10,000,000 no par value common shares. This compares with $4,505,205, or 42 cents a share, in the first quarter of 1925.

The consolidated income account for the quarter ended March 31, 1926, compares with the same quarter of 1925, as follows:

	1926	1925
Gross income	$11,559,191	$10,146,650
Depr., depl., etc.	6,063,300	5,641,445
*Net profit	$ 5,495,891	$ 4,505,205
Preferred dividends	260,481	263,481
Common dividends	3,500,000	3,500,000
Suprlus	$ 1,735,410	$ 741,724

*Before Federal taxes.

The Skelly Oil Co. for the quarter ended March 31, 1926, reports net income of $1,298,292 after interest, depreciation and depletion but before Federal taxes, equivalent to $1.34 a share (par $25) earned on 956,804 shares of capital stock. This compares with $750,134, or 90 cents a share on 831,479 shares outstanding in the first quarter of 1925.

The consolidated income account for the quarter ended March 31, 1926, compares with the corresponding quarter of last year as follows:

	1926	1925
Gross earnings	$5,420,584	$4,305,709
Expenses, etc.	2,776,586	2,148,693
Int. and discount	162,656	256,266
Depr. and depletion	1,183,050	1,050,616
Net income	$1,298,292	$ 750,134

New Bradford Oil

The balance sheet of the New Bradford Oil Co. as of December 31, 1925, shows as follows:

Assets: Investments, $7,466,151; cash $201,267; interest receivable, $343; notes receivable, $4,849; dividends receivable, $102,421; total, $7,775,031.

Liabilities: Capital stock, $5,323,686; accounts payable $131,393; dividends payable, $566; surplus, $2,319,387; total, $7,775,031.

Pacific Oil

The Pacific Oil Co. reports for the year ended December 31, 1925, net profit of $16,458,012, after Federal taxes and reserve for depreciation and depletion, equivalent to $4.70 a share earned on 3,500,000 no par value shares of stock. This compares with $11,893,766, or $3.40 a share in 1924.

Pure Oil

The Pure Oil Co. reports for the year ended March 31, 1926, net income of $12,922,302 after interest, Federal taxes, depreciation, depletion, etc., equivalent after preferred dividends to $3.70 a share (par $25) earned on 3,038,370 shares of common stock. This compares with $10,552,861, or $3.10 a share, on 2,860,196 shares outstanding in the previous year.

The consolidated income account for the year ended March 31, 1926, compares with the preceding 12 months as follows:

	1926	1925
Gross earnings	$118,715,184	$104,397,303
Expenses, etc.	96,726,230	*84,696,395
Oper. earnings	$ 21,988,954	$ 19,700,908
Other income	2,812,771	.....
Total income	$ 24,801,725	$ 19,700,908
Fed. taxes, etc.	2,391,932	.....
Interest, etc.	1,144,654	1,671,619
Depr., depl. etc.	8,342,837	7,477,028
Net income	$ 12,922,302	$ 10,552,861
Pref. dividends	1,670,505	1,668,890
com. dividends	4,937,515	4,263,591
Surplus	$ 6,314,282	$ 4,620,380
Previous surplus	$ 53,128,541	$ 49,279,738
Total surplus	$ 59,442,823	$ 53,900,118
Adjustments	‡58,076	‡771,577
P. & L. surplus	$ 59,500,899	$ 53,128,541

*Includes Federal taxes. ‡Credit. §Debit.

The consolidated balance sheet of the Pure Oil Co. and subsidiaries as of March 31, 1926, compares with the preceding 12 months as follows:

Assets

	1926	1925
Property, plt., eq.	$184,374,270	$178,246,428
Other inv.	4,049,261	2,987,927
Stock in treasury	316,000	316,000
Cash	3,140,021	3,198,614
Mark't. secur.	250,000	19,331
Accts. receivable	5,116,977	5,192,619
Notes receiv., etc.	738,824	456,427
Stks. crude & ref.	15,730,204	22,143,877
Mat. and supplies	3,871,669	3,578,591
Deferred charges	1,333,089	1,670,123
Total	$218,920,315	$217,809,947

Liabilities

Preferred stock	$ 23,000,000	$ 23,000,000
*Common stock	75,959,250	71,504,900
Moore Oil pfd.	800,000	800,000
Funded debt	10,430,000	20,813,500
Notes payable	4,350,000	9,100,000
Accrued taxes	1,252,605	460,667
Accrued int.	233,823	365,240
Com. & Ins. res.	215,992	166,550
Depr. and depl.	40,403,352	35,585,094
Other reserve	49,766	53,677
Surplus	59,500,899	53,128,541
Accts. payable	2,724,628	2,841,778
Total	$218,920,315	$217,809,947

DRAFT MODEL FIRE PROTECTION ORDINANCE

(Continued from Page 40)

ulations of the National Fire Protection Association.

Table 3—Underground Storage Tanks

Capacity (Gallons)	Minimum Thickness of Material—Gauge (U. S. Standard)	Lbs. per sq. ft.
1 to 285	16	2.50
286 to 560	14	3.125
561 to 1,100	12	4.375
1,101 to 4,000	7	7.50
4,001 to 12,000	1/4 inch	10.00
12,001 to 20,000	5/16 inch	12.50
20,001 to 30,000	3/8 inch	15.00

For tanks of 1,100 gallons and more a tolerance of 10 per cent in capacity shall be allowed.

Tanks of open hearth steel or wrought iron thinner than No. 7 gauge shall be galvanized.

For Class III liquids, if adequate internal bracing is provided, tanks from 12,001 to 30,000 gallons capacity may be built of steel plate ¼-inch thick.

All joints of tanks shall be riveted and caulked, brazed, welded, or made tight by some equally satisfactory process. Tanks shall be tight and sufficiently strong, to bear without injury the most severe strains to which they may be subjected in use. Shells of tanks shall be properly reinforced where connections are made, and all connections made through the top of the tank above the liquid level.

Tanks for systems under pressure shall be designed for four times the maximum working pressure, and tested to twice the maximum working pressure.

All iron or steel tanks shall be thoroughly coated on the outside with tar, asphaltum or other suitable rust-resisting material. Where soil contains corrosive substances, such special protection shall be provided as may be required by the chief of the fire department.

With the approval of the chief of the fire department, tanks of copper or other suitable material may be used if after the necessary handling incident to installation they are equivalent in strength, rigidity, durability and tightness to the steel or iron tanks described above.

Revisions presented in the progress report of the committee on flammable liquids on oil burning equipments include a proposal to allow 275-gallon tanks with certain specified safeguards to feed burners by gravity flow, whereas the previous limit was 60 gallons.

During the past year and a half the committee has been at work investigating the hazard of automobile tank trucks designed for gasoline distribution. The co-operation of the oil industry and the manufacturers of tank trucks has been enlisted and the specifications presented at the meeting formed the second draft of recommendations resulting from this co-operative effort.

CALIFORNIA DEMAND IMPROVED BY WEATHER

LOS ANGELES, Calif., May 15.—A decided improvement in the domestic demand for motor gasoline has developed. Local marketers attribute the improvement to the present very warm weather. Already a number of cars with out-of-the-state license plates can be seen throughout California and predictions of the automobile clubs are that travel will become very much heavier.

While shipments of petroleum products to the Atlantic seaboard were in excess of 700,000 bbls. during the past week, only 76,702 bbls. were gasoline. The remainder was crude oil. However, 236,580 bbls. of California gasoline were consumed in Atlantic foreign trade. Of this over 71,000 bbls. went to Germany, 165,000 bbls. to England and the balance to Canada. On the whole, shipments of California gasoline to the East Coast, have been somewhat below average during the past few weeks.

The natural gasoline market remains about the same. Local manufacturers apparently are able to unload their product at present prices without much trouble. At the same time a few train loads of Oklahoma natural gasoline have been received at refineries in California. The larger oil companies have controlled most of the natural gasoline production during the past few months and some smaller companies are now welcoming the opportunity to purchase the Oklahoma product at favorable prices. One or two of the larger companies are getting some Oklahoma natural gasoline. It is reported that transportation cost from the Mid-Continent is about 7 cents per gallon. At present California refiners are paying from 15½ to 16 cents for this material at their plants. This would indicate the Oklahoma manufacturers are receiving from 8½ to 9 cents. Local natural gasoline manufacturers feel that as the summer demand for motor gasoline begins to be felt in the Mid-Continent, the competition of Oklahoma natural gasoline in the local market will cease and the market here will strengthen accordingly.

NORTH TEXAS MARKET LACKS BUYING TREND

WICHITA FALLS, Tex., May 17.—North Texas refined markets were very unsettled Monday following the Mid-Continent crude advance Saturday and the tankwagon increases Monday. As usual following such advances refiners boosted refinery prices but the lack of a definite buying trend caused a feeling of uncertainty in all products.

Refiners on the whole were holding prices firmly at their new level Monday but so far most of the activity since the crude changes has been the taking out of material previously ordered and attempts on the part of buyers to cover on sales.

Although slow at 11 cents earlier in the week, the U. S. Motor gasoline was held from 12 to 12¼ cents Monday, refiners attempting to take up 1 cent on the crude change. Higher gravities, while prices were up, were admitted as not being as firm as the U. S. Motor grade, and numerous concessions were offered by refiners to move their products.

The dullness of high gravities was attributed to the almost total withdrawal of exporters from the market, which resulted in a noticeable narrowing margin between quotations of these grades and the U. S. Motor product.

North Texas natural gasolines were unusually quiet but as with refinery products, quotations were up a half cent or more. Naturals have been moving out

of North Texas on contracts in excellent shape but the spot market so far has been disappointing.

Kerosene was a quarter cent higher Monday but the sources from which this product could be obtained were materially greater in number and it could be bought without the difficulty experienced several weeks ago.

Because of the season of the year, fuel, gas oil and distillates were not affected particularly by the crude changes except for a greater firmness. Some attempts to raise quotations were made but the declining demand made it almost impossible to sell these products for any higher price. The 24-26 fuel was easily obtainable at $1.35 and gas oil still could be bought as low as 3⅞ cents.

SHREVEPORT MARKET PRICES FAIRLY FIRM

SHREVEPORT, La., May 17.—Saturday's crude bike and an expected raise in North Louisiana and Arkansas left the refined market uncertain with all products tight and 58-60 U. S. Motor advanced but finding no market during the past week. Practically all products save gas oil found a steady market and prices were fairly firm since the raise. Grade C natural was the only product having a demand. It advanced a quarter of a cent to 10½ to 10¾ cents and was firm.

Refiners were quoting U. S. Motor at 12 cents but not moving much stock. Kerosene was the firmest of the products at 10¼ to 10½ cents and scarce. The fuel oil market is strong at $1.25 to $1.30 and scarce. Monday found the tottering market of gas oil strengthened and the product steady at 4 to 4¼ cents; distillate firm at 4½ cents. Refiners and brokers are waiting for further developments.

PENNSYLVANIA MARKET REPORTED STRONGER

OIL CITY, Pa., May 17.—With the exception of cylinder stocks and wax, refined products in the Pennsylvania district have been considerably strengthened by the increase in crude prices of Saturday and today. Gasoline is a little better with increased demand and slightly higher prices. Neutrals are the best of the spring and prices are considerably higher. Kerosene prices were increased although this product is very scarce at present and very difficult to procure. Fuel oil was also strengthened.

RAIN GREETS SCOUTS IN CONVENTION CITY

SAN ANTONIO, Tex., May 18.—Four hundred oil scouts are registered here for the two-day convention of the National Oil Scouts of America. Rain delayed the sightseeing trip arranged to entertain the wives of the visitors.

San Angelo, represented by a hundred oil men and 50 citizens, accompanied by a jazz orchestra seems to be in the lead for the next convention city. Coincident with their arrival was a delegation from Shreveport and the Arkansas fields determined to take the next convention to Shreveport. The matter will be decided by the executive committee rather than by the convention, however, and will not be decided at this time.

Paul Martin, scout for the Pure Oil Co., at Wichita Falls, and president of the National Oil Scouts Association of America, was one of the first arrivals. Sam Semple, secretary and treasurer, was unable to be present and Walter Wise of Fort Worth, scout for the Texas Pipe Line Co., acted in his stead.

At the business session Tuesday the association elected Harry M. Sample, scout for the Marland Co., at San Antonio, president; W. N. O'Roark, scout for the Standard Oil Co. of Louisiana at Shreveport, first vice president; N. E. Tanner, scout for the Humble Co. at San Angelo, second vice president; Walter Wise, scout for The Texas Company at Fort Worth, secretary and treasurer, and C. P. Chrisholm, scout for the Pure Oil Co. at Mexia, chairman of the executive committee.

James V. Howe, scout for the Tidal Oil Co., a veteran in the business, died Sunday of appendicitis.

CRUDE OIL PRICES

(Continued from Page 201)

Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.30
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	2.40
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.35
Somerset Medium Oil in Cumberland Pipe Line Lines (Kentucky)	2.50
Somerset Light Oil in Cumberland Pipe Line Lines (Kentucky)	2.65
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky)	1.15
Gaines (Pennsylvania)	3.10
Keister (Pennsylvania)	2.45
MIDDLE WESTERN STATES	
Ohio Oil Co.	
Lima	2.48
Wooster	2.55
Illinois	2.37
Indiana	2.25
Princeton	2.37
Plymouth	1.90
Waterloo	1.35
*Western Kentucky, 32.9° and below	2.10
33° to 35.9°	2.20
36° to 38.9°	2.30
39° and above	2.40
†Cumberland, Barren and Monroe Counties	2.65
§Oil Springs (Canada)	2.95
§Petrolia (Canada)	2.88

*Posted by Indian Refining Co.
†Posted by Paragon Development Co.
§Posted by Imperial Oil Co., Ltd.

MEXICAN	
*Tuxpam light (f.o.b. Mex. ports)	$1.35
§Panuco heavy (f.o.b. Mex. ports)	1.15
Tuxpam (New York)	2.15
Panuco (New York)	1.80

*Plus 32.328c tax. §17.631c tax.

GROUP 3 MARKET IS SLOW AFTER ADVANCES

(Continued from Page 36)

without great difficulty before the close of the month when buying for heavy summer needs on the part of jobbers is expected to begin in earnest.

Advance a Surprise

Considering the weakening refined markets of last week and the increases in production of oil, the crude advance came as a surprise to many refiners, although several weeks before such an advance was thought inevitable. This proved costly to some refiners, who, discounting the raise, sold a substantial amount of gasoline ahead at low figures.

One refiner in particular sold a quantity of gasoline for shipment the next two weeks and was glad to get a price of a quarter cent under the quoted market, which now is a cent under the market. On the other hand a number of buyers made sales and postponed buying figuring on further declines. It was these buyers who rushed into the market Saturday morning attempting to cover.

Several large jobbers, however, said they had continued to expect the crude advance and had been buying steadily in anticipation of this. Now they say they have plenty of gasoline and will not have to be back in the market for a number of weeks.

The crude advance will help refiners having railroad fuel contracts as the majority of contracts included provisions that railroads pay from 60 to 65 per cent of all crude advances. This naturally will increase the revenue to refiners from these contracts.

The tankwagon advance also will mean an additional cent to refiners on all marginal contracts. However, there are fewer of these contracts this year than in the last several years as the majority of purchases this year were based on spot markets rather than on tankwagon postings.

Gasoline and Naphtha

The crude and tankwagon raises caused advances in quotations of from a quarter to a cent in all grades of naphtha and gasoline and put the U. S. Motor (58-60 437) product at the highest level since last August. While this product was quoted at from 12 to 12½ cents buyers had no difficulty in filling their needs at 12 to 12¼ cents and a few offerings were made as low as 11¾ cents.

Higher gravity gasolines were the slowest of all gasolines with refiners having extreme difficulty in moving these grades. Although quotations were raised to as high as 13¾ cents on 64-66 375 gasoline and 13 cents on the 60-62 400 grade Saturday these products could be obtained as low as 12¾ and 12¼ cents, respectively, Tuesday.

Because of the lack of export demand for the higher grades, the low gravity products comparatively were holding better, especially the 56-58 450, which was fairly tight at 11¾ cents. Naphtha continued scarce due to the kerosene situation which has resulted in many refiners quitting cuts of naphtha.

There were some rumors of export buying of U. S. Motor gasoline earlier in the week but so far as could be learned none of the purchases was in Oklahoma or North Texas.

Natural Gasolines and Blends

A slightly better demand for natural gasolines was noticeable Tuesday but the week as a whole, even Saturday and Monday, was very quiet. The movement still is not active but manufacturers are looking for favorable developments in the near future. Grade A and AA was quoted from 10¾ to 11 cents; B and BB at 10½ to 10¾ cents and C at 10¼ to 10½ cents.

Blend prices were advanced in line with other products and in addition manufacturers were hesitant in selling although they said they might have to take less by waiting. Blends were quoted from 11½ to 12 cents but the latter quotation was not bringing sales Tuesday.

Kerosene and Distillates

Kerosene continued firm during the week and with the tankwagon advances refinery prices Monday and Tuesday were at 10½ cents for the 41-43 water white grade. A marked increase in the material available was noticed during the week although demand still continued good.

Distillates were unchanged but were firm with material still offered only from 4⅝ to 5 cents. Some effort has been made by buyers to contract this product for next season's consumption but refiners still are holding off.

Fuel Oil and Gas Oil

So far as could be checked the crude advance had no effect on fuel oil prices except a slight firming Saturday. On the other hand, increasing concessions were being reported Tuesday out of all Mid-Continent centers even on higher gravities. Some 28-30 fuel was bought as low as $1.45 while 24-26 fuel was quoted from a few sources at $1.30. Lower grades were correspondingly low.

Gas oil was unchanged although there was some speculation Tuesday as to the possibility of a greater demand on this product for cracking stock as a result of the high crude prices. Cracked gas oil and other poorer grades were offered as low as 4 cents but the cracking stock was held firmly at 4¼ cents.

Lubricants and Wax

Largely the result of the unsettled lubricant situation which has existed several months, prices on lubricating oils were unchanged following the crude advance. A crude advance usually means an increase of from an eighth to a half cent in lubricating oil prices. Manufacturers, however, believe that the demand is improving to such an extent that it will not be long before they can command better prices.

Wax continued sluggish with this product available from 4¾ to 4⅞ cents. Some manufacturers were holding for 5 cents but were getting no business.

ACQUIRES OKMULGEE CONCERN

OKMULGEE, Okla., May 17. — The Oklahoma Natural Gas Co. has taken over the management of the Okmulgee Gas Co., which supplies gas to the domestic consumers of this city. It is reported that the actual sale was completed some time ago and the price paid was $500,000. It is believed that the sale of the Okmulgee Gas Co. followed the sale last year of the Kingwood Pipe Line Co., which was bought by a group of Pittsburgh men comprising some directors of the Oklahoma Natural.

NO DEFINITE PLANS FOR PANHANDLE PLANT

The Gulf Refining Co. has no definite plans for the construction of a refinery in the Panhandle Field of Texas, according to official information obtained Monday from the Pittsburgh offices of the company. The report regarding the building of the plant was widely circulated in the Mid-Continent area for several days.

Actual construction of a pipe line from the Panhandle Field connecting to its trunk lines at Ranger, Tex., to the Gulf Coast by the Gulf Pipe Line Co. has not been started. The fact that this project is still pending has led to the conclusion by some that the Gulf interests intended to build a skimming or topping plant to handle the crude rather than build a pipe line. It is conceded that the latter will be a difficult engineering problem due to the large wax content of the Panhandle crude.

The Gulf has a 10,000-bbl. skimming and cracking plant at Fort Worth, Tex., with its complete refinery at Port Arthur, Tex., has a rated capacity in excess of 100,000 bbls. daily.

BRATTON WOULD AMEND EXECUTIVE ORDER BILL

By Charles E. Kern
Washington Bureau,
The Oil and Gas Journal

WASHINGTON, D. C., May 15.—Senator Bratton, of New Mexico, has given notice in the Senate of a substitution that he intends to propose to Senate Bill 4152, to authorize oil and gas mining leases upon unallotted land within Executive Order reservations. This amendment authorizes and directs the Secretary of the Interior to reinstate and approve in the order of their original filing all applications filed prior to May 27, 1924, for permits to prospect for oil and gas under the act of February 25, 1920, upon any lands covered by the provisions of this act which applications were not granted, upon the following conditions: "Written request for such action shall be filed by the applicant, his heirs, privies in interest, or assigns, in the land office for the land district within which such lands are located, within 90 days from the date of the approval of this Act, and the reinstatement of any such application shall confer the right of prospecting and to secure a lease or leases, as in this section provided, upon the lands described in such application."

This provision will grant the privilege indicated of filing on this land to about 400 former applicants or their heirs or assigns would be denied that privilege by the bill as reported from the Senate Committee on Indian Affairs and also as reported to the House by the Committee on Indian Affairs of that body.

It also allows the states in which these Indian lands are located 37½ per cent of the proceeds from oil drilling, 62½ per cent to go to the Indians. Both of these contentions were very fully discussed at meetings of the Senate Committee on Indian Affairs and were advocated by Senator Harreld as well as Senator Bratton and others.

NEW GAS FRANCHISE

OKLAHOMA CITY, Okla., May 15.—Franchises for the distribution of natural gas have been asked of city and town councils in Conway, Atkins and Morrilton, Ark., by W. A. Cozart of Conway, formerly an Oklahoma operator. He expects to obtain gas from the new field at Clarksville and eventually to lay a pipe line from that field to Little Rock. W. O. Munkres and Elmer Rhodes recently were granted a natural gas franchise at Crescent, Okla., by an election held for that purpose. Gas will be obtained from the Texas Pacific Coal & Oil Co.'s well near that place.

FEDERAL TOOLS ARE BETTER TOOLS

The curve on the clamp fits the crown on the pulley and prevents bootlegging

Stop the Abuse of Your Belt by Using THE FEDERAL BELT CLAMP

The old style, straight bar clamp abuses your belt and shortens its life. The FEDERAL BELT CLAMP prolongs the life and usefulness of your belt by eliminating the "slap" and preventing bootlegging. Remember—it's not the USE, it's the ABUSE of your belt that costs you money.

The molded Rubber filler with the soft gum core prevents slipping.

Federal Belt Clamps are forged of pressed steel, drilled and fitted with 5/8-inch heat-treated steel bolts and lock washers.

Federal BITS

are "Better Bits"

The Federal "Red Diamond" bit is designed to give the maximum feet of hole in the shortest time possible. That's what a good bit should do. In the Red Diamond bit you have a great deal more metal at the shank, preventing break-offs that so often occur with inferior bits. You'll never break a Red Diamond Bit at the shank. This feature also gives the driller "more bit" to work with, as the additional metal can be drawn down when sharpening—assuring much longer life.

The Red Diamond bit is made of the best steel obtainable for this purpose—and the superior quality of the finished product is therefore standardized.

The workmen who "make" Federal Red Diamond Bits are proud of the excellence of their work. They use extreme care and exceptional knowledge in the production of every bit. No Federal Red Diamond Bit is sent out until it has been thoroughly inspected and tested. It has to be "right." That is why the Red Diamond always gives satisfaction.

The Reliable FEDERAL *Trapsocket*

Reg. U. S. Patent Office

The most efficient sucker rod fishing tool made to run in tubing which will permit the entire box and pin or coupling and pin to enter.

The construction of the *Trapsocket* makes it possible to catch the box or pin of any sucker rod or a rod broken between the box and pin without continual replacement of parts.

Ordinarily, when running a sucker rod socket, which is provided only with slips to catch a broken pin or coupling, it has been found necessary to buy a new set of slips for every job which meant an outlay of from $5.00 to $20. But with the *Trapsocket* rods with pins broken off, rods broken at the weld, broken at the wrench square or broken couplings can be successfully "fished" from tubing without using slips (Section No. 2).

The "latch" feature of the *Trapsocket* is one of the outstanding points of superiority. Rods are not "gripped," but the weight of the rods to be removed rest on latch, which in turn rests on a square shoulder. This latch is forged of CHROME NICKEL STEEL and is test-guaranteed to withstand the strain necessary to remove a 4,500-foot string of rods.

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NORTH CENTRAL TEXAS

(Continued from Page 47)

abandoned for No. 42 S. Beach by Magnolia, and the location for No. 13 O. C. Beach was temporarily abandoned.

Apple & Brandeberry plugged No. 18 Jennings-A at 2,663 feet. R. M. Armstrong's No. 1 Etheridge and others was a duster at 2,002 feet. Camp Oil & Gas Co.'s No. 13 Douglas "B" was a 20-bbl. completion at 1,939-44 feet. Dale Oil Corp.'s No. 22 Jennings was abandoned at 1,620 feet, and the Eureka Production Co.'s No. 13 Waggoner was dry at 1,041 feet. Joe Howell's No. 3 Burnett drilled deeper from 1,521 feet, made 4 bbls. of oil and 5 bbls. of water at 1,695-1,700 feet. Jefferson Oil Co.'s No. 5 Waggoner Brothers made 15 bbls. at 1,488-1,512 feet. Long, Cline and others plugged No. 1 Overby at 1,260 feet, and Magnolia Petroleum Co.'s No. 3 Maer "A" was also abandoned at 2,066 feet; No. 11 Watkins was dry at 1,774 feet. The location was abandoned for No. 1 Hoover, and Tidal Oil Co.'s No. 1 Waggoner Brothers was a failure at 1,380 feet.

Gulf Production Co.'s No. 15 Jennings "A" pumped 60 bbls. from total depth of 1,625 feet; No. 3 J. L. Waggoner and others "D" made 8 bbls. in 12 hours at 594 feet.

Wilbarger County

Humble Oil & Refining Co.'s No. 46 Stephens made 2,500,000 feet of gas at 1,185-1,205 feet. Phillips Petroleum Co.'s No. 4 Waggoner "G" was a 30-bbl. well at 1,861-82 feet; No. 1 Waggoner "PP" made 35 bbls. at 2,408-15 feet, total depth 2,416 feet. Prairie Oil & Gas Co.'s No. 2 Waggoner "B" made 20 bbls. at 1,887-92 feet, total depth 4 feet deeper.

Archer County

Barkley & Meadows' No. 24 L. F. Wilson produced 20 bbls. at 1,521-30 feet, total depth 1,532½ feet. Bridwell, Heydrick, Lincoln & Hutcheson's No. 1 W. T. Hutcheson was dry and abandoned at 1,450 feet. L. T. Burns' No. 1 McCrory, trustee, "C" was dry and abandoned at 1,656 feet. W. D. Hill and others' No. 6 W. T. Hutcheson was a failure at 1,421 feet. Howell & Barkley pumped 30 bbls. from No. 1 W. R. Brown at 1,295-97 feet, but it sanded up. Humble Oil & Refining Co.'s No. 6 Parrish and others "A" was a 20-bbl. well at 1,570-78 feet. The location was abandoned for No. 9 Parrish "B."

McCarty Oil Co.'s No. 25 L. F. Wilson "B" made 25 bbls. at 881-90 and 906-10 feet. McDonald and others' No. 1 S. M. Cowan estate was dry and abandoned at 1,559 feet. Texhoma Oil & Refining Co.'s No. 4 Parrish and others "A" was a failure at 1,618 feet. The Wanderer Oil Co. and Staley & Wynne's No. 1 McCrory, trustee, was dry and abandoned at 1,600 feet. Woodburn Oil Corp.'s No. 26 L. F. Wilson "A" made 45 bbls. of oil and 20 bbls. of water at 1,597-99 feet. Atlantic Oil Producing Co.'s No. 3 Oldham was good for 120 bbls. at 1,305-12 feet with total depth 1,344 feet.

Bridwell & Heydrick's No. 1 Hamilton was dry and abandoned at 1,231 feet. Cosden and Consolidated Oil Co.'s No. 5 Oldham "B" was dry at 1,386 feet. Humble Oil & Refining Co.'s No. 9 Hamilton was also dry at 1,244 feet; No. 3 Wolf was a 10-bbl. well at 1,362-65 feet; No. 5 Wolf was dry and abandoned at 1,360 feet; No. 6 Wolf was a 15-bbl. well at 1,330-49 feet.

Magnolia Petroleum Co.'s No. 1 Little swabbed 80 bbls. at 1,270-80 feet, total depth being 1,281 feet. Prairie Oil & Gas Co.'s No. 1 Hilton was dry and abandoned at 1,506 feet. Shasta Oil Co. and others' No. 1 Meade estate "A" pumped 63 bbls. the first 24 hours and 36 bbls. the next 24 hours at 1,437-57 feet. The Texas Company's No. 11 Jeske was good for 15 bbls. at 1,141-65 feet; No. 12 Jeske was dry and abandoned at 1,168 feet. The Texas-Consolidated Oil Co.'s No. 3 Wolf was a duster at 1,351 feet. Texhoma Oil & Refining Co.'s No. 6 Abercrombie & Taylor made 180 bbls. at 1,332-69 feet; No. 7 Wolf "A" was a 28-bbl. well at 1,323-36 feet, total depth 1,337 feet. The Texhoma Oil & Refining Co. and Republic Production Co.'s No. 3 Oldham made 30 bbls. at 1,062-77 feet, total depth being 1,080 feet. Verschoyle and others' No. 3 Young was a duster at 1,471 feet.

Gulf Production Co.'s No. 1 J. L. Anderson "B" was dry and abandoned at 1,509 feet; No. 9 M. W. Jackson and others pumped 63 bbls. at total depth of 1,561 feet; No. 6 B. R. Jeske pumped 60 bbls. at 1,174 feet; No. 8 M. W. Jackson and others "A" pumped 102 bbls. at 1,562 feet; No. 1 Kell-Kempner "A" was dry at 1,971 feet; No. 7 L. W. McCrory, trustee, "C" pumped 9 bbls. at 1,397 feet; No. 32 A. P. Nichols was dry and abandoned at 1,576 feet; No. 33 A. P. Nichols pumped 30 bbls. at 1,554 feet; No. 35 A. P. Nichols pumped 67½ bbls. at 1,555 feet; No. 6 Power Banking Co. pumped 100 bbls. at 1,407 feet; No. 5 T. B. Wilson was dry and plugged at 2,001 feet.

Clay County

Lone Star Gas Co.'s No. 5 Withers subdivision made 500,000 feet of gas at 1,606-11 and 1,635-39 feet, total depth being 1,644 feet.

Montague County

The Texas Company's No. 6 Oldham and others was a 130-bbl. well at 1,078-1,115 feet. Gulf Production Co.'s No. 4 R. W. Cunningham and others pumped 92½ bbls. at total depth of 991 feet; No. 2 R. W. Cunningham pumped 50 bbls. at total depth of 975 feet.

Young County

Bridwell & Heydrick's No. 2 Beardon made 110 bbls. at 1,056-75 feet; No. 3 was good for 15 bbls. of oil and 50 bbls. of water from sand at 1,045-66 feet. Bridwell & Mayfield's No. 7 Street was dry and abandoned at 1,293 feet. Goza and others plugged their No. 1 Hoffman at 500 feet. Howard Petroleum Co.'s No. 2 Stewart was an 80-bbl. well at 541-56 feet. Humble Oil & Refining Co.'s No. 12 Mercer made 125 bbls. at 1,023-63 feet. McElreath & Suggett and Phillips Petroleum Co.'s No. 1 Snyder made 8 bbls. at 579-86 feet. Murchison & Fain and Marland Oil Co.'s No. 3 Campbell "E" was dry and abandoned at 1,000 feet. Prairie Oil & Gas Co.'s No. 6 Boren was a 25-bbl. well at 1,064-74 feet. The Texas Company's No. 9 Beardon made 10 bbls. at 1,183-87 feet. Hubbard Drilling Co.'s No. 1 Hunt was a failure at 2,850 feet. Nash and Windfohr Oil Co.'s No. 1 Wergess was good for 15 bbls. at 2,443-72 feet. Simms Oil Co.'s No. 1 Goldston-Burkett was good for 25 bbls. of oil and 25 bbls. of water at 4,350 feet. Gulf Production Co.'s No. 7 R. Campbell "A" pumped 7½ bbls. at 926 feet; No. 1 W. E. Edwards was dry and abandoned at 1,212 feet.

Throckmorton County

Humble Oil & Refining Co.'s No. 1 Ledbetter produced 48 bbls. the first 24 hours and 30 bbls. the second day from sand at 775-78 feet.

Shackelford County

Buckeye Pipe & Supply Co.'s No. 1 Black Brothers was dry and abandoned at 816 feet. Dunigan and others' No. 2 Elliott made 7 bbls. at 662-68 feet. The location was abandoned for Jackson and others' No. 1 Russ and McCurdy and others' No. 1 Walker was dry and abandoned at 842 feet. Richardson Brothers abandoned their No. 1 Colbert at 1,800 feet.

Stephens County

Texas Consolidated Oil Co.'s No. 7 Martin made 40 bbls. of oil with 20,000,000 feet of gas at 3,916-24 feet. Federal Oil Co.'s No. 1 Gratz was plugged at 3,460 feet. Hanlon Gasoline Co.'s No. 2 Curry made 690,000 feet of gas at 3,108-3,257 feet. Texas Pacific Coal & Oil Co.'s No. 64 Binney produced 80 bbls. at 1,872-92 feet. Gulf Production Co.'s No. 9 G. R. Davis (trustee D.) made 40 bbls. of oil and 300,000 feet of gas at 3,272 feet; No. 30 J. M. Ward "C" was good for 130 bbls. and 936,000 feet of gas at 3,142 feet.

Eastland County

Corzelius Brothers' No. 1 Cooper was dry and abandoned at 3,345 feet. Corzelius Brothers and others' No. 1 Poe was likewise a duster at 3,505 feet.

Callahan County

C. O. Moore's No. 1 Brashear was a failure at 1,732 feet. Moutray Oil Co. and Reiter-Foster Oil Corp.'s No. 2 Finley was dry and abandoned at 2,375 feet.

Mitchell County

California Co.'s No. 2 C. M. Adams, Lease 2, made 62 bbls. from pay at 2,940-3,063 feet, total depth 3,075 feet.

Howard County

Owen & Sloan's No. 1 Chalk pumped 36 bbls. at 1,577-86 feet.

El Paso County

Burns & King temporarily abandoned No. 4 fee at 4,907 feet.

Sterling County

Chicago Texas Oil & Gas Co.'s No. 1 Durham was temporarily abandoned at 3,502 feet.

Coleman County

French & Lewis' No. 1 Morris was dry and abandoned at 2,778 feet. Morrison & St. John's No. 2 Young Brothers was likewise a failure at 2,651 feet. C. O. Moore abandoned No. 1 Morris at 2,730 feet. Owen & Sloan plugged No. 1 Baker at 2,520 feet. Superior Oil Co.'s No. 1 Helton was dry at 2,560 feet.

White Eagle Oil & Refining Co.'s No. 1 Dibrell made 150 bbls. at 1,888-1,922 feet. Howard Wright's No. 1 Star was dry and abandoned at 1,660 feet.

Brown County

Barkley & Conway's No. 6 Dunn made 100 bbls. at 1,111-31 feet. Brit's No. 1 Windham was dry and abandoned at 1,330 feet. Conway Brothers' No. 4 Wooldridge made 20 bbls. at 1,231-60 feet. Hughes Development Co.'s No. 4 Arledge made 10 bbls. at 1,305-27 feet; No. 6 Arledge was good for 100 bbls. at 1,279-97 feet. Rocky River Oil Co.'s No. 2 Newton was dry and abandoned at 1,376 feet. Simms Oil Co.'s No. 7 Gaines was dry and abandoned at 1,550 feet. E. L. Smith-Oil Co.'s No. 11 Dunn was a failure at 1,170 feet, and No. 1 Graham estate was dry and abandoned at 1,315 feet. States Oil Corp.'s No. 5 Allen "C" was another duster at 1,243 feet. The Texas Company's No. 9 Dunn made 100 bbls. at 1,121-41 feet. Williamson and others' No. 1 Keller was a 75-bbl. well at 1,161-80 feet.

Concho County

Dutton and others' No. 1 Schultz was dry and abandoned at 1,404 feet.

Pecos County

Tom Adams Oil Co.'s No. 2 Devlin was dry and abandoned at 410 feet.

Crockett County

Cromwell and others' No. 2 Powell produced 217 bbls. on the pump from sand at 2,688-92 feet. Humble Oil & Refining Co.'s No. 1 P. J. Sorg made 10 bbls. of oil and 6 bbls. of water on the pump from sand at 2,651-80 feet.

Hall County

Hudspeth & Taylor's No. 1 T. R. Fuston was dry and abandoned at 1,635 feet.

Hutchinson County

W. H. Holmes' No. 1 H. E. Smith flowed 192 bbls. from lime pay at 2,718-52 feet, total depth 2,785 feet. McMan Oil & Gas Co.'s No. 3 H. E. Smith flowed 506 bbls. after shooting at 2,721-85 feet. J. R. Phillips' No. 1 J. F. Weatherly flowed 65 bbls. at 3,040-65 feet, total depth 3,113 feet. Phillips Petroleum Co. and others' No. 1 Johnson Brothers flowed 1,600 bbls. at 2,980-86

EXHIBIT HALL WHERE THE NATURAL GAS SUPPLY MEN HELD FORTH

feet, total depth 3,008 feet. Phillips Petroleum Co.'s No. 4 H. E. Smith was flowing 200 bbls. after a shot in the lime at 2,881-2,922 feet. White Eagle Oil & Refining Co.'s No. 1 Johnson Brothers swabbed 600 bbls. initially from 2,699-2,717 feet. Gulf Production Co.'s No. 2 J. A. Whittenburg flowed and swabbed 830 bbls. from total depth of 2,969 feet; No. 6 C. L. Dial and others flowed 1,600 bbls. at total depth of 2,924 feet.

PRODUCTION BY FIELDS FOR WEEK ENDING MAY 10, 1926

Electra

Atlantic Oil Producing Co.	58
Empire Gas & Fuel Co.	651
Gulf Production Co.	1,054
Humble Oil & Ref. Co.	146
Magnolia Petroleum Co.	3,205
Panhandle Refining Co.	58
Phillips Petroleum Co.	16
Prairie Oil & Gas Co.	111
Rio Bravo Oil Co.	530
The Texas Company	3,504
Texhoma Oil Refining Co.	1,398
Miscellaneous	5,995
Total	16,726

Barkburnett

Gulf Production Co.	447
Humble Oil & Ref. Co.	388
Magnolia Petroleum Co.	2,591
Panhandle Refining Co.	250
Prairie Oil & Gas Co.	18
Sinclair Oil & Gas Co.	50
Skelly Oil Co.	155
The Sun Oil Co.	58
The Texas Company	369
Texhoma Oil & Ref. Co.	561
Miscellaneous	7,300
Total	12,187

Iowa Park

Atlantic Oil Production Co.	100
Gulf Production Co.	113
Humble Oil & Ref. Co.	163
Magnolia Petroleum Co.	400
Panhandle Refining Co.	32
Roxana Petroleum Corp.	7
Simms Oil Co.	24
The Texas Company	245
Texhoma Oil & Ref. Co.	351
Miscellaneous	3,038
Total	4,473

Wilbarger

Atlantic Oil Production Co.	172
Empire Gas & Fuel Co.	1,161
Gulf Production Co.	38
Humble Oil & Refining Co.	4,237
Phillips Petroleum Co.	4,379
Prairie Oil & Gas Co.	135
Roxana Petroleum Corp.	385
The Texas Company	43
Texhoma Oil & Ref. Co.	89
Miscellaneous	4,100
Total	14,739

Archer

Atlantic Oil Producing Co.	325
Barnsdall Oil Co.	1,342
Cosden Co.	969
Empire Gas & Fuel Co.	623
Gulf Production Co.	3,475
Humble Oil & Ref. Co.	1,657
Independent Oil & Gas Co.	13
Magnolia Petroleum Co.	1,255
Marland Oil Co.	11
Panhandle Refining Co.	160
Phillips Petroleum Co.	653
Prairie Oil & Gas Co.	2,187
Roxana Petroleum Corp.	363
Simms Oil Co.	604
Sun Oil Co.	415
The Texas Company	3,398
Texhoma Oil & Ref. Co.	3,398
Tidal Oil Co.	45
Miscellaneous	13,003
Total	34,296

Young

Gulf Production Co.	305
Humble Oil & Ref. Co.	353
Magnolia Petroleum Co.	152
Marland Oil Co.	1
Mid-Kansas Oil & Gas Co.	10
Panhandle Refining Co.	142
Phillips Petroleum Co.	20
Prairie Oil & Gas Co.	10
Roxana Petroleum Corp.	128
Simms Oil Co.	762
Sinclair Oil & Gas Co.	359
Sun Oil Co.	60
The Texas Company	498
Texhoma Oil & Ref. Co.	283
Tidal Oil Co.	159
Miscellaneous	3,900
Total	7,142

Stephens

Arkansas Fuel Oil Co.	25
Empire Gas & Fuel Co.	25
Gulf Production Co.	1,149
Humble Oil & Ref. Co.	675
Magnolia Petroleum Co.	385
Mid-Kansas Oil & Gas Co.	1,840
Phillips Petroleum Co.	375
Prairie Oil & Gas Co.	835
Republic Production Co.	125
Roxana Petroleum Corp.	40
Simms Oil Co.	35
Sinclair Oil & Gas Co.	65
Sun Oil Co.	150
The Texas Company	1,025
Texas Pacific Coal & Oil Co.	1,130
Transcontinental Oil Co.	2
Miscellaneous	4,868
Total	12,749

Shackelford

Empire Gas & Fuel Co.	20
Humble Oil & Ref. Co.	225
Magnolia Petroleum Co.	65
Phillips Petroleum Co.	725
Prairie Oil & Gas Co.	10
The Texas Company	215
Texhoma Oil & Ref. Co.	80
Miscellaneous	3,325
Total	4,665

Ranger

Arkansas Fuel Oil Co.	10
Gulf Production Co.	222
Humble Oil & Ref. Co.	60
Magnolia Petroleum Co.	750
Mid-Kansas Oil & Gas Co.	115
Panhandle Refining Co.	150
Phillips Petroleum Co.	5
Prairie Oil & Gas Co.	580
Republic Production Co.	45
Simms Oil Co.	30
Sinclair Oil & Gas Co.	310
The Texas Company	165
Texas Pacific Coal & Oil Co.	830
Transcontinental Oil Co.	29
Miscellaneous	2,501
Total	5,802

Eastland-Comanche

Empire Gas & Fuel Co.	10
Humble Oil & Ref. Co.	85
Magnolia Petroleum Co.	670
Mid-Kansas Oil & Gas Co.	135
Phillips Petroleum Co.	45
Prairie Oil & Gas Co.	85
Sinclair Oil & Gas Co.	15
Skelly Oil Co.	110
The Texas Company	110
Transcontinenti Oil Co.	25
Miscellaneous	705
Total	1,990

Brown

Cosden Co.	650
Humble Oil & Ref. Co.	450
Prairie Oil & Gas Co.	315
Simms Oil Co.	40
The Texas Company	885
Transcontinental Oil Co.	25
Witherspoon Oil Co.	25
Miscellaneous	4,850
Total	7,240

Callahan

Humble Oil & Ref. Co.	3
Prairie Oil & Gas Co.	25
The Texas Company	215
Texas Pacific Coal & Oil Co.	25
Witherspoon Oil Co.	0
Miscellaneous	2,950
Total	3,218

Miscellaneous Pools

Reagan County	33,432
Clay County	454
Montague County	2,595
Jack County	96
Throckmorton County	650
Baylor County	137
Palo Pinto County	503
Coleman County	1,100
Scurry County	26
Mitchell County	3,586
Crockett County	585
Upton County	236
Total	43,400

Panhandle

Carson County	2,336
Hutchinson County	15,908
Wheeler County	87
Gray County	470
Total	18,801
Grand total	187,428
Total previous week	185,777
Increase	1,651

New Locations Outside of the Panhandle

Wichita County

Bullington, Lee & Pendleton's No. 1 Grace Jennings "B", 1,075 feet south and 616 feet east of NW cor. Section 8, H. T. & B. Survey; Humble Oil & Refining Co.'s No. 4 T. L. Burnett "E", 450 feet south and west of NE cor. SE NW, Section 6, S. A. & M. G. Survey; No. 5 H. B. Hines, 1,750 feet north and 1,170 feet west of SE cor. of west 200 acres H. B. Hines tract, Section 11, H. & G. N. Survey. Larkin & Wilson's No. 2 J. L. and T. J. Waggoner, 150 feet north and west of SE cor. Lot 13, Waggoner Brothers subdivision of Section 8, G. H. & H. Survey. George Pace's No. 1 A. B. Edgerly, 150 feet north and east of SW cor. Lot 37, Section 1, S. A. & M. G. Survey. E. J. Stump & Co.'s No. 1 W. H. Chilson, Section 21, 150 feet north and east of SW cor. Section 21, League 4, Denton County school land. Texhoma Oil & Refining Co.'s No. 6 T. L. Barnett "M", 150 feet south and 830 feet west of NE cor. NE SE, Section 3, S. A. & M. G. Survey.

Wilbarger County

Humble Oil & Refining Co.'s No. 7 W. T. Waggoner "M", 150 feet north and west of SE cor. of 40-acre lease "M" out of Section 42, Block 4, H. & T. C. Survey; No. 8, 480 feet south and 150 feet west of NE cor. same 40 acres; No. 9, 483 feet south and 508 feet east of NW cor. same lease; No. 10, 483 feet south and 507 feet west of NE cor. same lease. Humble Oil & Refining Co.'s No. 7 W. T. Waggoner "C", 790 feet north and 150 feet west of SE cor. 40-acre "O" lease, Section 47, Block 4, H. & T. C. Survey; No. 8, 446 feet north and 456 feet west of SE cor. same lease. Milham Corp.'s No. 4 W. T. Waggoner "B", 150 feet south and 1,049 feet west of NE cor. "B" lease, Section 31, Block 4, H. & T. C. Survey.

Phillips Petroleum Co.'s No. 3 W. T. Waggoner "Q", 150 feet north and 220 feet west of SE cor. Section 47, Block 2, H. & T. C. Survey; No. 1 W. T. Waggoner "R", 220 feet north and east of SW cor. Section 45, Block 4, H. & T. C. Survey; No. 5 W. T. Waggoner "NN", 155 feet south and west of SE cor. of Milham Corp.'s "H" lease, but on Phillips' "NN" lease of 177 acres in Section 42, Block 4, H. & T. C. Survey.

Baylor County

Magnolia Petroleum Co.'s No. 7 W. H. Fortwood, 1,050 feet north and 950 feet east of SW cor. Section 2,412, T. E. & L. Survey. T. L. Head and others' No. 1 J. W. Stevens "A", 150 feet south and west of NE cor. of west 40 acres of south 80 acres of north 240 acres of J. W. Stevens' 350-acre tract in Sam T. Sheffield Survey.

Archer County

Cosden & Consolidated Oil Co.'s No. 1 L. C. Herron, 750 feet south and 150 feet east of NW cor. Section 1,833, T. E. & L. Survey. Creath & Medders' No. 1 H. L. and J. F. Ward, 829 feet north and 150 feet west of SE cor. south 60 acres of east 80 acres of south half of Section 1,379, T. E. & L. Survey. Dale Oil Corp.'s No. 1 G. P. Meade estate, 150 feet north and east of SW cor. east 26 acres, Section 39, G. P. Meade estate of "L. M." pasture. M. Donohue's No. 2 W. L. Andrews, 450 feet north and 150 feet east of SW cor., north 100 acres of east half, Section 1,826, T. E. & L. Survey. Golding, Cochran & Cline's No. 1 H. O. Prideaux, 450 feet south and 150 feet east of NW cor. of west 80 acres of east 114 acres of south half, John Dorsey Survey; No. 1 R. O. Prodeaux, 450 feet south and 150 feet west of NE cor. SE 50 acres (square), in Section 3, Indianola R. R. Survey. Madden and others' No. 1 Ben Schlegel, 870 feet north and 450 feet east of SW cor. west 40 acres of south 80 acres of east 320 acres of west half, Section 2, B. B. B. & C. Survey. Texhoma Oil & Refining Co.'s No. 7 Abercrombie & Taylor, 500 feet south and 150 feet east of NW cor. of west 70 acres of SW of Section 2, S. P. R. R. Survey. United Producers Co.'s No. 2 R. O. Prideaux, 150 feet south and west of NE cor. of north 200 acres of south 313 acres, J. I. Hand Survey.

Montague County

Benton Woods and others' No. 8 Childs, 150 feet north and east of SW cor. of 32-acre lease, J. J. Wall Survey. J. H. Jamieson's No. 1 R. W. Cunningham, 150 feet south and west of NE cor. W 79 acres of 318-acre tract, G. Bayne Survey. Pure Oil Co.'s No. 3 J. W. Maddox "A," 203 feet north and 748 feet east of SW cor. of 46.67-acre lease "A" in S. H. Arnold Survey. The Texas Company's No. 7 I. A. Gist "A," 1,156 feet north and 250 feet west of SW cor. of S. H. Arnold Survey, and located in William Donoho Survey; No. 7 J. B. Oldham and others, 550 feet north and 1,691 feet west of SE cor. 80-acre lease in John Chambliss Survey. Texhoma Oil & Refining Co.'s No. 9 J. W. Rowland and others "A," 150 feet south and 2,076 feet west of NE cor. of 55-acre lease, John Chambliss Survey.

Young County

Bridwell & Mayfield's No. 1 Allen Williams, 1,100 feet north and 1,140 feet east of SW cor. Section 26, Young County School Land. Christie & Graham's No. 1 W. G. Leberman, 200 feet south and 1,225 feet west of NE cor. Section 153, T. E. & L. Survey. Cosden and Consolidated Oil Co.'s No. 3 M. J. Benson, 750 feet south and 900 feet west of NE cor. Section 1,391, T. E. & L. Survey. Howard Petroleum Co.'s No. 4 G. P. Stewart, 150 feet north and 750 feet west of SE cor. Section 8, Young County School Land.

O. K. Pipe Threading Machine Co.'s No. 1 R. J. Calvin, 750 feet south and 150 feet east of NW cor. of R. J. Calvin's 200-acre tract in A. Rolins Survey. J. J. Moran's No. 1 G. P. Stewart, 1,854 feet south and 1,562 feet west of NE cor. David Dawson Survey. Pandem Oil Corp.'s No. 1 R. C. Howard, 150 feet south and east of NW cor. north 28 acres of west 68 acres of west 118 acres of S half of Section 1,366, T. E. & L. Survey. Stafford & Hayes' No. 1 Wallace, 150 feet south and west of NE cor. of 70-acre tract in S. Tynes Survey.

Barney Carter's No. 1 S. L. English, 150 feet NW of SE line and 150 feet NE of SW line of NW 80 acres of NE 160 acres of Section 542, T. E. & L. Survey; No. 2, 150 feet NW of SE line, 150 feet SW of NE line of NW 80 acres of SW 160 acres of Section 537, T. E. & L. Survey. C. C. Cady's No. 1 R. E. Burns, 300 feet north and west of SE cor. NE Section 68, Lunatic Asylum land. Humble Oil & Refining Co.'s No. 5 W. I. Cook, 150 feet north and 450 feet west of SE cor. S half SW, Section 84, Block 10, E. T. R. R. Survey. W. E. Hunter's 660 feet west of SE cor. E half SE, Section 47, Blk 14, T. & P. Survey. Merry Brothers & Perini's No. 1 W. P. Nowell, 660 feet south and west of NE cor. NE NW, Section 11, Block 12, T. & P. Survey. Milham Corp.'s No. 2 Z. W. Casey, 750 feet NW of SE line and 450 feet SW of NE line, Section 581, T. E. & L. Survey.

Stephens County

Humble Oil & Refining Co.'s No. 1 W. F. Houston, 830 feet south and 325 feet east of NW cor. W. F. Houston's 160-acre trace, Section 6, Block 6, T. & P. Survey. Texas Pacific Coal & Oil Co.'s No. 65 Charles Rinney, 2,553 feet north and 867 feet east of SW cor. Section 52, Block 4, T. & P. Survey.

Callahan County

Goodloe & Duff's No. 1 I. N. Jackson, 150 feet north and east of SW cor. of I. N. Jackson tract, Section 118, B. B. B. & C. Survey. Mississippi Valley Oil Co.'s No. 1 Alice Cutbirth, 450 feet south and 1,000 feet west of NE cor. of Victoria County School Lands, Survey 212.

Mitchell County

California Company's No. 6 H. C. Miller, Lease 4, 330 feet south and 990 feet west of NE cor. NW, Section 22, Block 28, Township 1n, T. & P. Survey.

Howard County

Marland Oil Co.'s No. 1 Otis Chalk, 330 feet south and west of NE cor. S half SE, Section 113, Block 29, W. and N. W. Survey.

Hutchinson County First Reports

Following are "first reports" in Hutchinson County; locations unless otherwise specified: Canyon Oil & Gas Co.'s No. 4 J. A. Whittenburg, 250 feet from north line, 300 feet from west line SW SW, Section 12, Block Y, M. & C. Survey; No. 5, 330 feet from east and south lines SW SW, same section. Dixon Creek Oil Co.'s No. 9 H. E. Smith and others, 990 feet west and 330 feet south of NE cor. NW, Section 11, Block Y, building rig; No. 17, 990 feet north and 330 feet east of SW cor. NE, Section 14, Block Y, building rig; Gibson Oil Corp. and R. F. McMillen's No. 1 Johnson Brothers, 330 feet south and west of NE cor. Section 28, Block Y, rig. McMan Oil & Gas Co.'s No. 5 H. E. Smith, 330 feet each way from NW cor. north 50 acres of east 100 acres of NW Section 5, Block Y, rig on ground. Phillips Petroleum Co.'s No. 1 Johnson Brothers-Graham, 330 feet each way from NE cor. Tract 5, Mary Whitley Survey. Roxana Petroleum Corp.'s No. 1 H. Jasper, 990 feet north and 330 feet west of SE cor. Section 6, Block M-26, T. C. R. R. Survey; No. 3 H. E. Smith, 990 feet south and west of NE cor. SW, Section 11, Block Y, rig; No. 4, 990 feet south and 330 feet west of NE cor. SW, Section 11, Block Y, location; No. 4 H. E. Smith and others, 990 feet north and west of SE cor. NW, Section 14, Block Y. Westex Oil Co.'s No. 4 J. A. Whittenburg, 330 feet north and east of SW cor. NW SE, Section 13, Block Y, building rig.

Marland Oil Co. staked 13 new ones in Hutchinson County alone during the past week: No. 1 S. B. Burnett "D," 450 feet from east and south lines E half NW, Section 128, Block 5; No. 1 Johnson Brothers "A", 330 feet from north and east lines of S half NE, Section 20, Block Y, building rig; No. 2 Johnson Brothers "A", 330 feet from south and east lines S half NE, Section 20, Block Y, building rig; No. 1 Reimer, 330 feet from north and east lines Section 29, Block 47, building rig; No. 1-B Weatherly, 330 feet from north and east lines NW NE, Section 19, Block Y, building rig; No. 1 Whittenburg, 330 feet from north and east lines south 1[illegible] acres, Section 65, Block 46; No. 2, 330

feet from south and east lines south 120 acres Section 65; No. 3, 330 feet from south and west lines, same 120 acres; No. 4, 330 feet from north and west lines, same 120 acres; No. 1-A Whittenburg, 330 feet from north and east lines of 120-acre tract in M. Whitley Survey; No. 2-A, 330 feet from south and east lines; No. 3-A, 330 from south and west lines; No. 4-A, 330 feet from north and west lines, same tract. All of the foregoing have rigs building.

Carson County Locations

New locations, all by Marland Oil Co. and all with rigs building: No. 6 Burnett, 1,320 feet from south and west lines, SW, Section 107; No. 7, 1,320 feet north and 450 feet east of SW cor. Section 107, Block 5, I. & G. N. Survey; No. 1 Burnett "C," 450 feet south and west of NE cor. Section 105, Block 5, I. & G. N. Survey; No. 1 Burnett "D", 450 feet west and north of SE cor. E half NW, Section 128, Block 5, I. & G. N. Survey. Gulf Production Co. made location for No. 12 Burnett in the NE cor. SE of Section 116, and for No. 14 in the SE cor., some section, and for No. 15, in the NW cor., Section 106.

Hutchinson County Drilling

Canadian River Oil Co.'s No. 2 W. L. Kingsland swabbed 50 bbls. daily from pay at 2,951-3,045 feet; No. 3 swabbed 35 bbls. from lime at 2,814-19 and 2,-855-71 feet, total depth 2,925 feet; No. 4 was setting 6-inch at 2,790 feet. Coble Oil Co. and Whittenburg's No. 1 J. A. Whittenburg was drilling at 2,490 feet; No. 2 had its first show of oil at 2,910 fet; No. 4 drilling at 310 feet.

Dixon Creek Oil Co.'s No. 8 H. E. Smith swabbed 100 bbls. one day at 2,785-2,950 feet, total depth 2,956 feet; No. 21 had first gas at 2,490 feet and was drilling at 2,553 feet; No. 18 was drilling at 2,595 feet; No. 14 at 2,455 feet; No. 29 had a show at 2,797 feet and was setting the 6-inch. This company had 18 tests in all stages from rigs to near-completions.

Gates Oil Co.'s No. 1 W. L. Kingsland was shot with 70 quarts at 2,958-3,028 feet making 75 bbls. the first hour afterward but bridged and now flows 70 bbls. daily through the bridge. No. 2 W. L. Kingsland bridged after a 70-quart shot at 2,954-3,017 feet and swabbed 240 bbls. the first 24 hours. It is now cleaning out and swabbing. No. 3 was running 6-inch to 2,907 feet; No. 4 was running 5-inch liner to 2,944 feet. Gibson Oil Corp. and others' No. 1 W. L. Kingsland swabbed 120 bbls. the first 12 hours at 2,887-2,939 feet, cleaning out.

Inspiration Oil Co. will have to skid No. 1 Earle Thompson at 780 feet because of quicksand. Dan A. Japhet's No. 1 H. E. Smith was drilling at 2,304 feet. J. H. Lenix' No. 1 Johnson Brothers sprayed 15 bbls. at 2,935-39 feet. Lucky 10 Oil Co.'s No. 1 H. E. Smith and others sprayed a little oil at 2,757-2,803 feet and was shut down for storage. Total depth is 2,855 feet.

McMan Oil & Gas Co.'s No. 1 H. E. Smith was drilling at 2,380 feet and No. 2 at 2,340 feet; No. 4 had first oil show at 2,697 feet and second at 2,733 feet, spraying a little; No. 1 Johnson, building new rig; No. 1 Johnson Brothers and Whittington, rig on ground.

J. H. Middleton's No. 1 H. E. Smith, drilling at 2,450 feet; No. 2, drilling at 2,210 feet. Midwest Exploration Co. and others' No. 1 H. E. Smith, setting 6-inch at 2,825 feet; No. 2, 2,520 feet.

A. D. Morton's No. 1 Johnson Brothers had 12,000,000 feet of gas at 2,890 feet, drilling. New Domain Oil Co. was setting the 6-inch at 2,778 feet. Phillips Petroleum Co. and Coble Oil Co. was drilling No. 4 J. A. Whittenburg at 2,-805 feet, with a show of oil at 2,755 feet.

Phillips Petroleum Co.'s No. 1 Johnson Brothers-Finklea was running the 8-inch at 2,210 feet; No. 1 Johnson Brothers-Stephens was spudding at 272 feet. Phillips Petroleum Co. and Gibson Oil Corp.'s No. 1 J. A. Whittenburg was drilling at 2,355 feet. Phillips Petroleum Co. and Pulaski Oil Co.'s No. 1 E. Cockrell was drilling at 2,625 feet where it had its first show of gas; No. 1 J. A. Whittenburg had a show at 2,-862-66 feet but pulled the rig in at 2,868 feet. Phillips Petroleum Co.'s No. 2 J. A. Whittenburg swabbed 410 bbls. from sand at 2,957-60 feet. Phillips Petroleum Co. and Pulaski Oil Co.'s No. 1 Johnson Brothers swabbed 45 bbls. from sand at 2,928-44 feet.

Prairie Oil & Gas Co.'s No. 1 Johnson Brothers (Section 4) was drilling at 325 feet. Relief Oil Co.'s No. 1 H. E. Smith was drilling at 2,475 feet. Roxana Petroleum Corp.'s No. 1 H. E. Smith was cementing at 2,624 feet; No. 2 drilling at 2,480 feet; No. 2 H. E. Smith and others was drilling at 2,860 feet, with 1,500 feet of oil in the hole at 2,857-60 feet; No. 3 was drilling at 2,965 feet, making 25 bbls. daily at 2,915-20 feet. Skelly Oil Co.'s No. 1 Johnson Brothers "A" drilling at 2,935 feet, had shows of oil at 2,895 and 2,933 feet; No. 1 Johnson Brothers was shot with 160 quarts at 2,968-3,010 feet, making b.s. and water from above. Gas broke in behind the casing. Skelly's No. 2 J. A. Whittenburg was shot again, this time with 90 quarts, at 2,912-52 feet and has averaged 65 bbls. pumping since.

J. L. Smith's No. 1 H. E. Smith was drilling at 2,590 feet in lime. Spring Creek Oil Co.'s No. 1 H. E. Smith was shot with 390 quarts and made 1,350 bbls. the ensuing 24 hours, at 2,691-2,782 feet. Sunny Jim Oil Co.'s No. 2 J. A. Whittenburg, drilling at 2,680 feet. Summit Oil Co.'s No. 2 J. A. Whittenburg, drilling at 2,335 feet. J. A. Swindler & Son's No. 1 E. Cockrell, drilling at 340 feet. The Texas Company's No. 1 E. Cooper, underreaming and cleaning out at 3,580 feet; No. 7 S. B. Burnett, drilling at 1,940 feet. Travelers Oil Co.'s No. 2 W. L. Kingsland, drilling at 2,425 feet.

J. K. Hughes' No. 2-A W. L. Kingsland, drilling at 2,254 feet; No. 5, drilling at 2,960 feet; No. 6, drilling at 305 feet. J. D. Ward's No. 1 E. Cockrell had a show of oil at 2,957 feet and was fishing tools. White Eagle Oil & Refining Co.'s No. 2 H. E. Smith, drilling at 2,770 feet; No. 3 drilling at 2,652 feet; first gas at 2,420 feet, second gas at 2,590 feet.

(Status of wells not mentioned has not changed materially since last week's report).

Moore County

Cadman and others' No. 1 J. T. Sneed, Jr., shut down at 140 feet with collapsed pipe. Clark, Harbin & Baldridge's No. 1 O. E. Gober, cellar. Phillips Petroleum Co.'s No. 1 J. T. Sneed, Jr., total depth 1,590 feet; rebuilt rig, now fishing tools. Moore County Oil Co.'s No. 1 J. T. Sneed, Jr., fishing 12-inch at 975 feet.

Hartley County

Deep Rock Oil Co.'s No. 1 Lyman & Balfour was spudding.

Carson County

Marland Oil Co.'s No. 2 Burnett "A" was rigging up; No. 3 was drilling at 260 feet; No. 4 was rigging up; No. 5 Burnett was drilling at 2,690 feet; Magnolia Petroleum Co.'s No. 2 was drilling at 2,440 feet. Prairie Oil & Gas Co.'s No. 1 C. E. & G. W. Deahl had rig on ground. McFarland & Thomas' No. 1 G. W. Witter was shut down at 485 feet. W. W. Silk's No. 6 Burnett estate was drilling at 300 feet. The Texas Company's No. 4 M. C. Burnett was drilling out cement plug at 2,879 feet. Young & Patrick's No. 1 J. C. McDonnell was drilling at 2,455 feet making 2,000,000 feet of gas.

Gray County

Clark & Baldridge's No. 1 Merton Brothers was drilling at 2,560 feet. The Texas Company's No. 1 W. J. Brown swabbed 85 bbls. one day only last week from lime at 3,218-37 feet and was cleaning out; No. 2 Saunders was drilling at 2,538 feet.

Wheeler County

Midwest Exploration Co.'s No. 2 G. W. Porter pulled the rig in at 2,303 feet and was being plugged to abandon. No. 1 J. M. Shelton was drilling at 1,-055 feet.

Loving County

Lockhart & Co.'s No. 1 R. L. Allen, 330 feet SE NW and 2,970 feet SW NE, Section 82, Block 33, H. & T. C. Survey.

Winkler County

Brandon & McCamey's No. 1 Kloh & Rumsey, C SW, Section 11, Block 46, T. & P. Survey. Leigh Taliaferro's No. 1 Jennie Sealy, C SW, Section 28, Block A, Gunter, Munson, Maddox Brothers and Anderson Survey.

Ector County

Leigh Taliaferro's No. 1 J. J. Henderson, C SE, Section 3, Block 43, Township 3s, T. & P. Survey.

Coleman County

Burke & Greis' No. 3 J. C. Dibrell, 4,250 feet south and 3,200 feet west of NE cor. J. W. Hicks Survey, No. 265, being 250 feet south and 750 feet west of NE cor. of the 40-acre lease. Burke & Greis and Gwinnup's No. 7 J. C. Dibrell, 4,200 feet south and 950 feet west of NE cor. same survey, being 250 feet south and east of CNL of their lease. Magnolia Petroleum Co.'s No. 16 J. P. Morris, 1,291 feet south and 150 feet west of NE cor. J. D. Davidson Survey No. 80. National Oil & Refining Co.'s No. 1 R. E. Harris, 883 feet north and 140 feet east of SW cor. R. E. Harris' 640-acre tract out of M. E. P. & R. Survey No. 81. Neely and others' No. 1 J. W. Cox, 1,320 feet south and 660 feet west of NE cor. Mary Dirks Survey.

Brown County

Anderson & Shultz' No. 1 R. L. Holt, 200 feet north and west of SE cor. northwest 40 acres of northwest 160 acres, Section 21, B. B. B. & C. Survey. Barkley & Conway's No. 9 T. L. Dunn, 150 feet south and 1,690 feet west of NE cor. north 31 acres, Section 12, Delgado Survey; No. 10 T. L. Dunn, 150 feet north and 1,450 feet west of SE cor. same 31 acres. Brown & Co.'s No. 1 J. G. Gaines, 150 feet south and west of NE cor. W half 80-acre tract, William L. Swain Survey No. 145. Conway Brothers' No. 5 W. M. Wooldridge, 150 feet south and east of NW cor. W. M. Wooldridge's 320-acre tract, E. T. R. R. Survey, No. 157. J. S. Cosden's No. 2 Elmo Williams, 150 feet north and 450 feet east of SW cor. A. May Survey; No. 8 Elmo Williams "A", 608 feet north and 201 feet west of most southerly SE cor. of R. L. Coffelt Survey. Gillman & McMurray's No. 7 J. H. Moore, 200 feet north and 960 feet east of SW cor. J. M. Moore's 100-acre tract in W. B. Smith Survey, No. 155. Humble Oil & Refining Co.'s No. 1 W. W. Allen, 200 feet north and west SE cor. E half Allen's 145-acre tract, Section 8, Juan Delgado Survey; No. 3 J. C. Kilgore, 745 feet south and 200 feet west of NE cor. Section 3, J. Delgado Survey; No. 3 J. Y. Hodnett, 200 feet north and 1,800 feet east of SW cor. south 160 acres of J. T. Hodnett's 400 acres of J. M. Harris Survey. R. C. McCarter and others' No. 6 J. H. Allen, 550 feet north and 1,390 feet west of SE cor. Section 7, J. Delgado Survey; No. 2 A. Leatherwood, 1,130 feet south and 155 feet west of NE cor. 193-acre tract, Section 11, J. Delgado Survey. McMan Oil & Gas Co.'s No. 1 J. G. Gaines, 150 feet south and west of NE cor. E half, J. G. Gaines' 80-acre tract, William L. Swain Survey. The Texas Company's No. 9 T. L. Dunn, 450 feet south and 750 feet west of NE cor. south 40 acres, north 71 acres, Section 12, J. Delgado Survey; No. 10, 150 feet south and 1,350 feet west of NE cor. same 40 acres; No. 11, 150 feet north and 725 feet west of SE cor. same 40 acres; No. 12, 150 feet north and 1,021 feet west of SE cor. same 40 acres.

Reagan County

Marland Oil Co.'s No. 1 Sawyer Cattle Co., 330 feet north and west of SE cor. NE, Section 154, Block 1, T. & P. Survey.

Upton County

Marland Oil Co.'s No. 4 Burleson, 660 feet south, 45 degrees east from No. 2 Burleson and 330 feet from line between Burleson and Sanger leases; No. 5 Burleson, 660 feet south, 45 degrees east from No. 3 Burleson, and 330 feet from line between Marland's 480-acre Burleson lease and Dixie Oil Co.'s lease; No. 6, 660 feet south, 45 degrees east from No. 5 Burleson, and 330 feet from line between Marland and Dixie leases; No. 7, 330 feet from south and 990 feet from east lines of lease; No. 8, 2,196 feet from south and 2,970 feet from east lines of lease. Marland Oil Co.'s No. 1-A Burleson, 330 feet from northwest line, and 330 feet from northeast line, Section 4, G. C. & S. F. Survey. Marland's No. 3 Sanger, 740 feet south, 40 degrees west from No. 2 Burleson; No. 4 Sanger, beginning at most easterly corner of Sanger lease, 1,650 feet north, 45 degrees west, thence 375 feet south, 40 degrees west (direct offset to No. 4 Burleson); No. 5 Sanger, beginning at same corner, 330 feet north, 45 degrees west, thence 320 fect south, 40 degrees west (direct offset to No. 3 Burleson).

Crane County

Marland Oil Co.'s No. 1 Durham, 330 feet from west and south lines, Section 82; No. 1-B Hughes, 330 feet north and 250 feet west of SE cor. Julia Prater Survey, Section 2 (direct offset to Marland's No. 1 Benton County school land); No. 1-C Hughes, 330 feet from north and east lines, Section 86, Block X, C. C. S. D. & R. G. N. G. Survey.

Crockett County

J. D. Young and others' No. 1 R. Massie, C SW, Section 31, Block UV, G. C. & S. F. Survey.

Recent Patents

(Continued from Page 198)

said supplemental still, a condensor, vapor line connections from both said fractionators to said condenser, a return pipe from the supplemental still to the cracking still, and a feed pipe connected to the first named fractionator for introducing fresh oil into the system through said fractionator and said supplemental still.

CHEMISTS THEORIZE ON ENGINE KNOCKS

(Continued from Page 198)

case, it would cause a lowering in the efficiency of the compound, while in the former it might cause slight preignition.

"The ideal antiknock compound should possess a decomposition temperature which will cause it to begin to function just with or just after ignition of the charge by the spark plug."

Essential Properties

Five properties, according to the researchers, are essential to this ideal antiknock. The first is volatility, with the boiling point under 400 degrees Centigrade. The second is that the amount of free metal liberated when the compound is heated in the air should be complete. The decomposition temperature should be between 200 and 300 degrees Centigrade. Temperatures developed by oxidation of the metal should be high compared to ignition temperatures of the fuel. The particles should be of colloidal size to favor rapid oxidation.

The knock in an automobile engine, it was explained, is supposed to be due to the fact that the burning of part of the gas mixture so compresses the unburned portion, that this unburned portion becomes hot enough to ignite spontaneously.

The burning of the gas is analogous to the burning of a firecracker, which takes a finite time to happen, while the spontaneous ignition of the remaining gas is analogous to the explosion of the firecracker itself, which happens at almost infinite velocity.

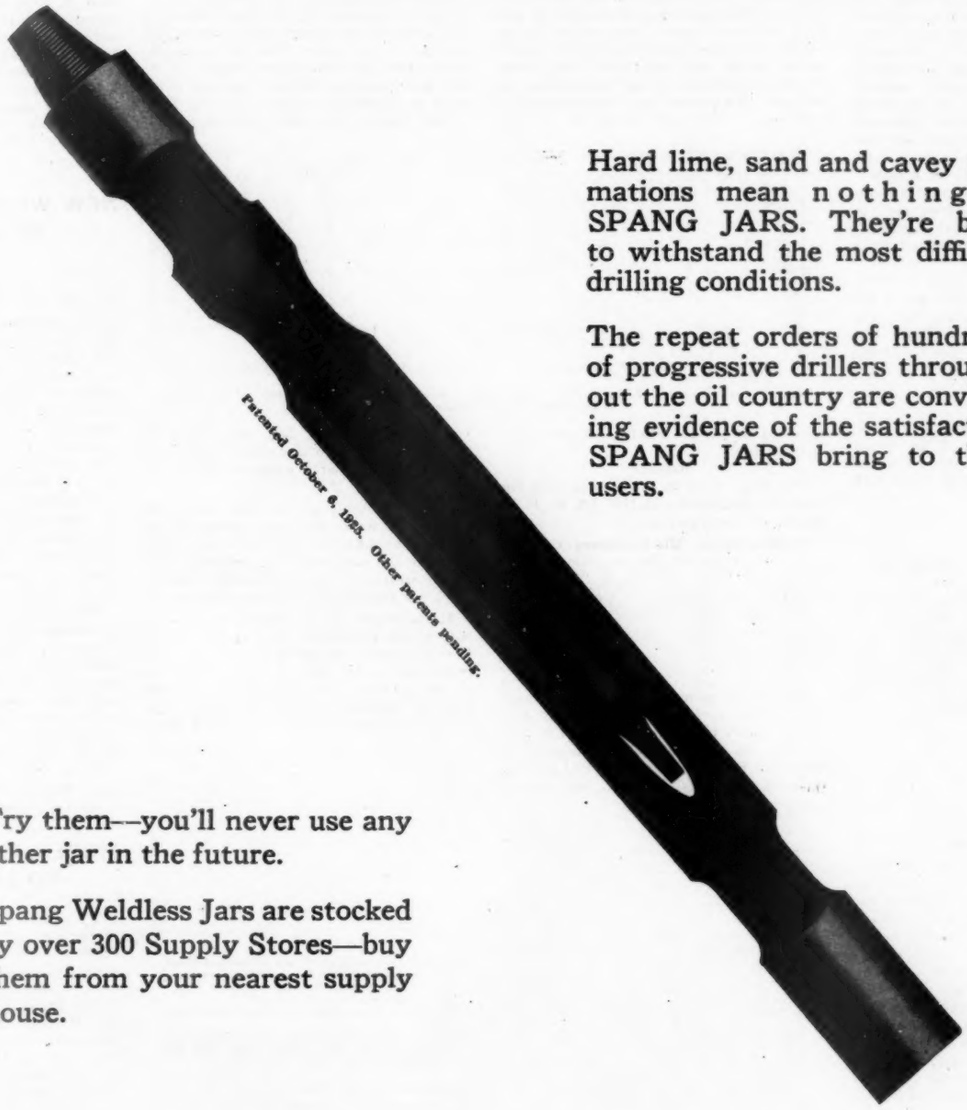
The little particles of lead distributed throughout the gas mixture vastly increase the swiftness of the flame travel and make it possible for the flame to reach every part of the gas before it has had a chance to ignite spontaneously.

Important to chemical science, it was said, was the finding by the investigators of a method of comparing one antiknock with another. On the basis of this disclosure the table of values with tetraethyl lead as the dominant compound was constructed.

STOLL REFINING CO. NOT PAYING PREMIUM

The Stoll Refining Co. of Louisville, Ky., announces that it is not paying a 25-cent premium in Barren County, Kentucky, as reported following the laying of its line to the Emery-Moore and Hall Baker Pools.

Spang Drilling Jars Thrive On Hard Work!



Hard lime, sand and cavey formations mean nothing to SPANG JARS. They're built to withstand the most difficult drilling conditions.

The repeat orders of hundreds of progressive drillers throughout the oil country are convincing evidence of the satisfaction SPANG JARS bring to their users.

Try them—you'll never use any other jar in the future.

Spang Weldless Jars are stocked by over 300 Supply Stores—buy them from your nearest supply house.

Spang and Company
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Sold by All Leading Supply Companies

Spang Thread Protector

Protect your Tool Joints with SPANG Thread Protectors. *Like all Spang products they guarantee absolute satisfaction and long, durable service.*

Effect of Pressure on Total Volume

Unique Laboratory Method Shows Result Obtained With Partially Vaporized Crude From Mid-Continent Field

By Robert E. Wilson and H. G. Schnetzler*
Standard Oil Co. of Indiana, Whiting, Ind.

In order to make an intelligent design of a pipe still or of a series of heat exchangers where a moving stream of liquid is heated and partially vaporized, it is necessary to know approximately the amount of liquid vaporized, or better, the volume of vapor plus liquid, as a function of temperature and pressure. These data cannot be determined at all accurately either from an ordinary distillation or from a vapor pressure curve, since it is a complicated function of pressure, temperature, and composition. Attempts to estimate it by conventional methods have been found to give inaccurate results. On the other hand, direct measurements to cover the various combinations of pressures and temperatures met in practice are not feasible by the ordinary methods which might be employed by a single determination.

This paper describes a method which has been perfected in this laboratory for determining the necessary data and presenting the results in graphical form, and gives the results obtained on a typical Mid-Continent crude oil containing various amounts of water.

Method

The method consisted essentially in introducing different volumes of the liquid to be tested into a previously evacuated bomb of known volume and measuring

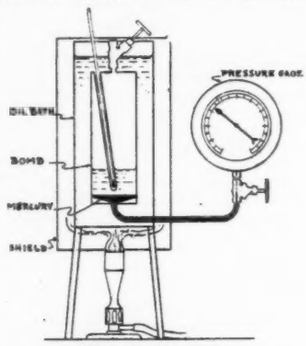

Figure 1—Apparatus

the pressures set up at different temperatures. From the resulting pressure-temperature curves made with different ratios of total volume to cold liquid volume, it is then possible to plot another series of curves showing the ratio of total volume to the volume of the cold liquid as a function of temperature and pressure.

In arranging the apparatus it was found necessary to have the pressure gauge at some distance from the bomb in order to prevent its being affected by the temperature. The connecting tube had to be filled with a non-volatile, oil-insoluble liquid in order to prevent any condensation of vapors therein, while the gauge itself was filled with water to prevent mercury from attacking the pressure element. The arrangement of the system is shown in Figure 1. The pressure gauge and the system as a whole were found to be substantially correct by measuring the pressure developed by measured amounts of water at various temperatures.

It was desired to make the measurements on samples of Mid-Continent crude with several different water contents, covering the range likely to be met with in practice—in other words, up to about 2 per cent by volume of water. The first measurements were therefore made on pipe line crude containing 0.2 per cent water. Three other sets of measurements were made on samples containing 1 per cent and 1.75 per cent water and on a sample dried by filtering through paper, taking precautions to prevent loss by evaporation. The samples containing 1.0 and 1.75 per cent water were made up by adding measured quantities of the salty water which had separated from crude to the samples of crude containing 0.2 per cent. To prevent any segregation this additional water was measured and introduced into the bomb separately for each charge.

*Presented before the Division of Petroleum Chemistry at the Seventy-first Meeting of the American Chemical Society, Tulsa, Okla., and reprinted from society's publication, "Industrial and Engineering Chemistry."

Results

The crude used in these tests gave the following Engler distillation (A. S. T. M. apparatus for gasoline):

Distillation of Mid-Continent Crude

Water, 0.2 per cent by volume
Gravity, 35.0° A. P. I.

% Off	°F.	% Off	°F.
Initial	152	6.0	221
10	252	15.0	284
20	322	25.5	374
30	405	27.5	392
40	473	38.0	460
50	558	42.5	500
60	632	55.0	600
70	690	72.0	700

The direct results obtained from each series of measurements are shown in Figure 2, which plots pressure against temperature for different volumes charged to the still. Figure 3 shows plots based on these same results in which the ratio of the volume of vapor plus liquid to the volume of cold liquid is plotted against pressure for different temperatures. The latter figures are more useful in practical design.

In considering these figures one is particularly impressed by the large difference produced by the variations in the water content of the crude. This is, of course, due to the fact that water because of its very low molecular weight, expands much more in vaporizing than does oil. Thus at 300 degrees Fahrenheit and 40 pounds

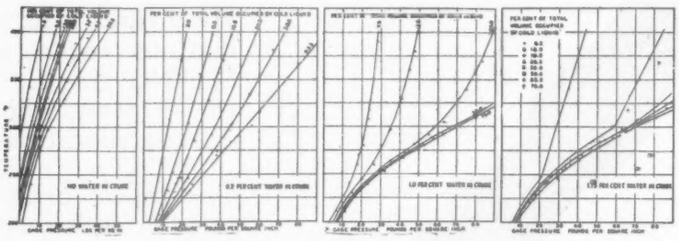

Figure 2—Effect of Temperature and Pressure on the Total Volume of Partially Vaporized Mid-Continent Crude

pressure dry crude has not expanded over 15 per cent, while crude containing 1.75 per cent water expands 1,100 per cent.

It is interesting to note that, while 0.2 per cent of water markedly increased the pressure at different temperatures, it does not give the rather striking bulges in the curves which are shown by crude containing 1 per cent and 1.75 per cent of water.

If the water is all present as a separate phase (emulsified drops), its vapors should merely be added to that of dry crude up to the time it is all vaporized at the pressure and temperature prevailing. By adding together the vapor pressures measured for dry crude and those

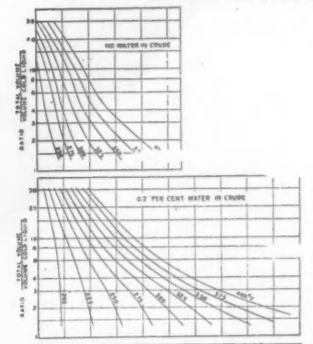

Figure 3—Effect of Temperature and Pressure on the Total Volume of Partially Vaporized Mid-Continent Crude.

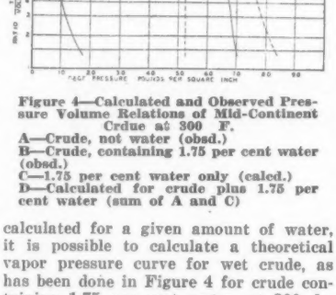

Figure 4—Calculated and Observed Pressure Volume Relations of Mid-Continent Crdue at 300 F.
A—Crude, not water (obsd.)
B—Crude, containing 1.75 per cent water (obsd.)
C—1.75 per cent water only (calcd.)
D—Calculated for crude plus 1.75 per cent water (sum of A and C)

calculated for a given amount of water, it is possible to calculate a theoretical vapor pressure curve for wet crude, as has been done in Figure 4 for crude containing 1.75 per cent water, at 300 degrees Fahrenheit and varying pressure. It will be noted that the observed curve has the same peculiar shape as the calculated, but is rounded off and is somewhat lower throughout. This discrepancy increases with increasing total pressure, and also with increased temperatures, and is undoubtedly due in large part to the actual solubility of part of the water in the crude oil. That this may be quite appreciable is shown by the results of Groschuff[1]. The increase at higher temperatures and pressures is, of course, characteristic of immiscible liquids.

The presence of dissolved salt in the water would also have a slight effect in lowering the observed vapor pressures, especially when the water is nearly all vaporized.

At moderate pressures and at temperatures above 300 degrees Fahrenheit the volume of vapors produced is so large that it must certainly be taken into account in calculating heat consumption, rates of heat transfer, and pressure drops to be anticipated in all equipment where a moving stream of oil is heated. The serious effect of even small slugs of water or highly emulsified crude is readily apparent from the results on crude containing only 1.75 per cent water as compared with dry crude.

[1]Leslie, "Motor Fuels," p. 646; C. A., 5, 2550 (1911).

NEW WELDING TORCH OF SMALLER DESIGN

Consistent with the demand for a small welding torch for work not requiring the usual standard torch, the Alexander Milburn Co., Baltimore, Md., has perfected the Type J-Jr. Torch. This is described as a sturdy, compact torch giving a high degree of efficiency and economy. The torch uses the same tips as are supplied with the standard larger torches and is adaptable to all classes of welding. It uses low and comparatively equal pressures of oxygen and acetylene.

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The supermixing of the gases through a standardized system of multiple mixing assures a complete intermixing of the gases and a uniform flame. The seats of the tips are flat, with annular grooves coinciding with those in the head, the gas passages entering through the annular grooves or rings which separate the gases. The construction of these seating surfaces allow lateral expansion of torch head and tip without distortion and the seats are reported very easily refaced.

MORE GASO PUMPS SENT TO SALT CREEK FIELD

The Gaso Pump & Burner Manufacturing Co., of Tulsa, announces the sale of 30 additional Gaso pumps to the Midwest Refining Co., of Wyoming, pipe line department, for installation in the Salt Creek Field. This is a repeat order, as the Midwest Refining Co. installed 109 new Gaso pumps, of the same type, in this same district early last year. All of these units are being driven by electric motors and are giving entire satisfaction, being part of a comprehensive electrification program of the Midwest Refining Co. in connection with the Salt Creek plant.

The Gaso Pump & Burner Manufacturing Co., also announces a shipment of Gaso pumps to the Riveria Comodor Oil Co., Buenos Aires, South America. This also is a repeat order, a shipment of Gaso pumps having been made to this company about six months ago.

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Important for the German car industry is the formation of the Ambi-Budd-Werke in conjunction with the Edward G. Budd Manufacturing Co. of Philadelphia. The new firm will manufacture cold-pressed all-steel bodies with an estimated output of 200 a day, or 60,000 a year—half the expected demand for cars in Germany.

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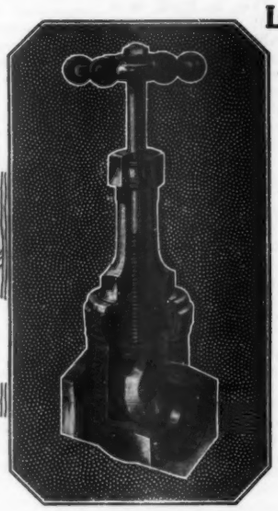

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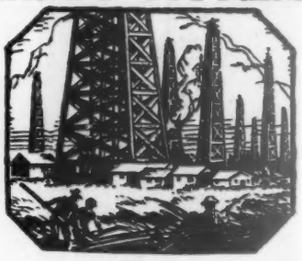

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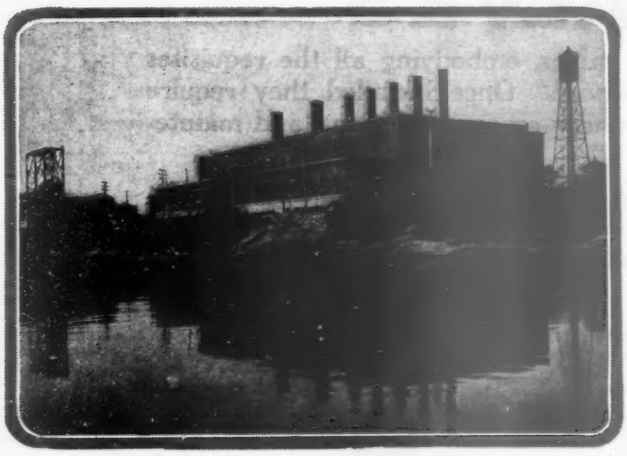

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Public Service Co.
of Oklahoma
FRED W. INSULL, President

OPERATING ECONOMIES IN THE GAS FIELDS

(Continued from Page 89)

wells equipped according to best practice. As long as the rock pressure is great enough most of the water will be held back in the sand or will be carried off with the gas. But when the rock pressure gets low the water starts to take possession.

The oldest method of ridding the well of water is by opening the well to the atmosphere and allowing both water and gas to gush forth. This, in itself, is a waste, and, although it may temporarily help matters, it is only a matter of time before the well will be dead. Many wells have been flown every day in order to get the water out of their systems.

There are several other methods of eliminating water from gas wells which are well known, but no set rule will apply to all wells. Each well has its own pecularities and is a study in itself. For instance, one method might work on one well, or in one locality, but would be useless in another district. There are certain ideas and rules which are used in the East, while others are used in the Mid-Continent area. They are of equal value as long as they accomplish their purpose.

With the deeper drilling which has been the custom the past few years, comes the difficulty of handling the high pressure wells. In order to get away from the frequent flowouts of gates and fittings, most of these wells are shut in with hydraulic fittings, which will safely stand the high pressure.

With this high rock pressure and in many cases low deliveries, the matter of handling the gas without having the gates freeze took considerable experimenting. But the difficulties have been solved with heaters and so-called regulating by-passes. The line from the well to the meter setting is usually 1,800-pound line pipe or 2-inch, 2,500-pound tubing. If a 2-inch gate valve is cracked to handle the right amount of gas desired, the result will be freezing off breaking open and freezing with the accompanying painted chart on the meter. So the method of regulating the flow of gas is to open wide the master and side gates on the well and close the line gate above mentioned. Around this gate is built up to or three by-passes of from 1-inch down to ½-inch pipe with high pressure brass stops in the lines. The object is, of course, that one of these by-passes will handle the amount of gas normally passing, with the stop probably nearly wide open. On some wells of extremely high pressure two such by-passes are used, making two cuts, and, with the addition of heaters no trouble is experienced with freezing control gates.

Open Flow

Next in the discussion of the care of the wells comes the old subject of open flow. Unfortunately it is a ruling of the Corporation Commission of Oklahoma that the open flow of each well must be taken monthly and the amount recorded with them. Aside from the actual waste of gas into the air, open flow tests are undesirable because of the possible damage to the well. The sudden release in pressure causes a rush of gas in the sand toward the hole. This tends to draw both sand and water into the opening. Allowing wells to blow open has frequently resulted in water breaking into the well either from the bottom or around the casing shoe. Heavy flows of gas may cut away the casing seat and cause the hole to cave, the casing to settle, or otherwise damage the well.

But even if this were not such a wasteful method, is the open flow capacity of the well as figured correct? Does the formula as used for small wells apply to wells of over a hundred million? Should the relation of the diameters of pipe sizes be based on the squares of diameters as used, or on the 5/2 relation in flow of gas in pipe lines? The Kingwood Oil Co.'s gasser in Section 16-10-9 in Oklahoma gauged 108,000,000 in the 10-inch and 89,000,000 in the 8-inch. If the table as used was correct, the variation in pipe diameters, velocity and friction should have been taken care of and both gauges should have been the same.

The minute pressure method of determining the open flow or capacity of a well, while not so wasteful, is very seldom applicable because the well records are in such poor condition.

A method has been devised, described in a paper presented by H. R. Pierce, who, in conjunction with the Bureau of Mines, worked out all the details. Here the necessity of wasting any gas is eliminated, and besides, the charts from the well serve as a barometer to underground conditions. Not only is the "potential capacity" known by this method, but the process serves as the regulating device entirely. This work is a great step forward and should be adopted by many of the companies as their method of regulation and for determining the "potential capacities" of their wells.

After the open flow has been determined by some method, there is a great loss to all if the well is not properly exhausted. Certainly this cannot be accomplished by allowing it to run with gates wide open, for the pressure will drop rapidly and water will rush in and hold the gas back in the sand. The percentage which it is allowable to take from a well is limited in Oklahoma by the Corporation Commission, which prescribed 25 per cent of its daily capacity as the limit. In the Osage Nation, which is governed by the rulings of the Indian Agency, the limit is set at 20 per cent of its daily open flow capacity.

Transportation

After the wells have been drilled and shut in, and reasonable care has been taken to keep the gas in the hole until it is needed, it is up to the gas company to transport it to the various consumers. There are just as many ways of laying pipe and maintaining it as there are in drilling, and, although leakage is tremendous in some cases of drilling, many millions of feet have been flown into the air through carelessness on the part of the gas pipe line companies. How many lines have been screwed together and laid on top of the ground exposed to all weather with never a thought again about it until some break occurs which demands the attention of the owner.

The Bureau of Mines has run leakage tests lately which give astonishing results. On many lines on which they worked, merely tightening the packing in gate valves made the line fairly tight. They worked out various leakage figures, but one which should put all pipe line companies on their guard against leaks, even to the smallest, is the leakage from a ¼-inch hole. In a year's time, with the pressure at 300 pounds, a ¼-inch hole will allow 154,100,000 feet of gas to pass into the air. This gas at 10 cents per thousand, would equal a loss of $15,000. Figures such as these should change the minds of many gas line companies who believe they will make exactly as much money by installing poor second-hand equipment and not caring how it is put in.

The distance gas must be transported is steadily increasing. The increase in the length of the transmission lines increases the amount of leakage due to the additional number of collars, couplings, or welds and also due to the additional pressure necessary to transport the gas the greater distance.

Within the past year a line was laid which attracted considerable attention by the careful and exact manner in which it was laid. This was 16-inch line, approximately 35 miles long. Before operations were begun the line was sounded for rock and the blue prints marked accordingly. The water from suspicious looking streams was tested and where detrimental to steel pipe, so marked. In crossing all such streams later on, the line was securely enclosed in cement. Every foot of the line was painted with a protecting coat besides the outside coat of enamel. At every place where it was expected there would be request for a tap later on, a nipple of suitable size was welded on the outside of the pipe but not tapped through. This idea eliminates one of the worse sources of leaks saddles. All such nipples were easily located later on by markers along the

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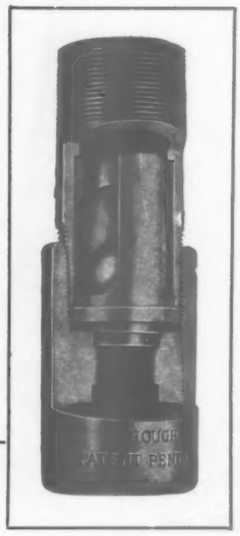

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pipe line. This line cost more to install than one just "laid," but it will outlast three lines not painted, cemented and properly buried. It might be said that the test pressure held up on this line for three days with only a five pound pressure drop.

Measurement of Gas

Under the head of "Transportation" comes the subject of "Measurement" which might be a paper in itself. Gas measurement is rightly called the "scales and cash register of any gas company." According to the ruling of the Oklahoma Corporation Commission: "All gas transmitted by any utility shall be measured accurately by proper apparatus prior to entering the pipe line and upon its exit therefrom, and all gas consumed for light, heat or power in connection with its transmission, shall be measured accurately in order that the 'lost and unaccounted for' in transmission may be determined."

Those gas companies whose desire it is to make every foot of gas earn its own way, are following this ruling to a letter and going it one better in some instances. Each well is individually measured at the well. Sometimes 8 to 10 wells are then tied into a feeder or gathering line and it in turn empties into a main line. At the latter point another meter is set so as to segregate each individual group of wells. At any point where a main line enters another main line or at the junction of two or three lines, meters are set. In this way a very accurate record is kept of the amount of gas entering and laving each small system. This provides an excellent way in which to divide a large system into units with superintendents in charge of units and each vieing with the other to keep the leakage low in his district.

Gas sold for drilling and field purposes is measured through either a positive or orifice meter; gas for domestic users along the line is reduced in pressure by a regulator and measured by a regular iron body meter; gas for fuel at gasoline plants and compressor stations is also measured by the majority of companies and gas that is used in company houses is measured, and, while not paid for by the employe, is accounted for in the leakage statement.

Many changes have been made in the science of measuring the gas and several changes have taken place in the field. Besides the use of the welded meter run or setting, now comes the use of welding in tying together the ¼-inch connections from the flange to the gauge. This makes a very neat looking job in addition to its value in moving the fittings quickly and easily from one setup to another. Welding also provides a 2-inch orifice setting for measurement to drilling wells. The whole thing, welded as a unit, may easily be loaded on a truck and taken from place to place intact.

Gas sold to drilling wells by the meter has been one of the greatest means in overcoming great wastes of gas. Where the sale was made formerly at a flat rate of so much a day it did not matter to the operators how badly their lines leaked, nor how much gas was wasted in the boiler by the fan burner and in the forge and for flambeaux. But with gas on a metered rate the lines are now tight and the majority of operators ask for low pressure on their lines as a result of the invention of low pressure burners which can generate the desired steam pressure with as low as four or eight-ounce gas.

Late practice in compressor stations shows a trend away from the large units to more of the smaller type. Gas, by nature, is so migratory that it is a very expensive installation to set up several of the large units and then find no gas there to compress. However, the large unit will always have its place at vital points in the main line transmission system.

More than likely all of the improved methods herein are known to the gas men of the older eastern districts, but it has been the purpose of this paper to show that all concerned in the handling of the great natural resource in the Mid-Continent area are using every known method of conservation and where one is not known, are devising one. Why? Because "Natural gas has never been equalled by any man-made product."

MICHIGAN FIELDS

(Continued from Page 68)

dose of water right around 800 feet which makes slow drilling from there on. The next well will be drilled deeper in the sand to test it more thoroughly.

The nearest well to be drilled to this well was between Port Huron and Blaine which was only drilled to a 900-foot depth. Some time ago they drilled a well at Brown City to the west some 20 miles or so from Blaine, which was claimed to be a dry hole.

Saginaw Field

No new completions have been made in the Saginaw Field of Saginaw, Mich., although two of the present drilling wells should be completed before the close of May. They are the Saginaw Prospecting Co.'s No. 1 in a subdivision of North Saginaw and an offset to the south of the discovery well on the City of Saginaw's property, and the advance well is considerably over a mile to the north of the Sun Oil Co.'s well on the Weiss tract, which is being drilled by the Bliss Petroleum Co. on the Carl Boldenbuck 160 acres, Section 2, Saginaw Township. This last venture, should it prove a commerical producer, will add a large scope of territory to the present pool which covers an area of a mile square. The Bliss well is now the main figure in the Saginaw Field, and to a great extent the future development of the field will depend upon its outcome.

The Saginaw Prospecting Co. now has 5 wells completed, with a combined daily production of 68 bbls., and all located on adjoining tracts of land. The discovery well was drilled last August. The sand in this well was found at 1,823 feet; No. 2 at 1,825 feet; No. 3 at 1,834 feet; No. 4 about the same depth and No. 5 at 1,823 feet. The Bliss Petroleum Co.'s No. 1, on the western part of the Casper Ulrich farm, Section 14, Saginaw Township, is reported holding around 20 bbls., while the Sun Oil Co.'s No. 1, on the J. W. Weiss farm, is said to be making 18 bbls. daily.

The Saginaw Prospecting Co. has two wells under way. No. 1 on a Saginaw subdivision and an offset to the south of the discovery well, and No. 1 on the east line of the John Palves farm, an offset to the east of the Bliss Petroleum Co.'s No. 1 on the Ulrich farm. When the two wells are finished the company will have seven completions in the field.

Sun Oil Co. Operations

The Sun Oil Co. is starting two additional wells. One on the western part of the Adam Nuerminger 20 acres an offset to its Weiss farm well, and the other is on the west end of the John Schoenheit 20 acres, an offset to the south of the Weiss well.

The Bliss Petroleum Co. has made a very important location and drilling will soon start on the southeast corner of the Fred Engel farm, in the east half of the southwest quarter of Section 10, Saginaw Township, along the Shattuckville road and half a mile west of the Bay road. This venture will be a mile directly west from the Sun Oil Co.'s well on the Weiss farm, and a half-mile north and a mile west of the discovery well of the Saginaw Prospecting Co. The Engle test will be one that will be closely watched by lease owners and if drilled and it proves a producer will add a large area of undrilled acreage to the present pool. The Bliss Petroleum Co. has also staked a location for a second well on the Casper Ulrich farm, Section 14, while the Saginaw City Building Co. contemplates the drilling of a test on the southwest corner of the E. E. Householder 371 acres, one-half mile east and one-half mile north of the Sun Oil Co.'s Weiss farm well and nearly a mile southeast of the test drilling on the Boldabuck farm.

The Independent Torpedo Co. of Findlay, Ohio, has a location in the field north of Saginaw and doing its share of work of shooting in the field.

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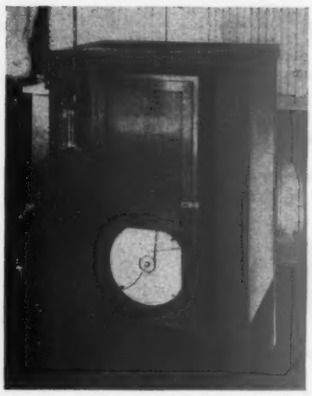

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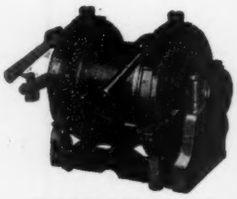
Picture shows hoist lifting roof plates for storage tanks, Marland Refining Co., Ponca City, Okla.



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OKLAHOMA PRODUCTION LESS IN FIRST QUARTER

(Continued from Page 154)

Offenbacher Petroleum Co., Tulsa 3,082
Oglesby, Robert, Tulsa 4,191
Ohio-Osage Oil Co., Hominy 6,124
O'Hornett, Carl J., Henryetta 875
Oil State Petroleum Co., Enid 15,624
Oilsurance Corp., Pawhuska 314
Okeh Oil & Ref. Co., Tulsa 428
Okla-Penn Oil Co., Bartlesville 621
Oklarado Oil Co., Okmulgee 644
Oklausa Oil Co., Jackson, Tenn. 136
Oklavania Oil Co., Tulsa 31,133
Okliana Oil Co., Tulsa 6,222
Okmulgee Supply Co., Okmulgee 203
Oko Oil & Gas Co., Lima, O. 1,879
Olean Petroleum Co. (By Prairie O. & G. Co.) Independence, Kans. 183,329
Olean Petroleum Co., Olean, N. Y. 303,628
Oliphant Petroleum Co. (N. T. Gilbert and Joseph Glass, receivers,) Tulsa 1,572
Omega Oil Corp., Shreveport, La. 730
Oneida Petroleum Co., Warren, Pa. 3,973
O'Reilly, J. T. and Emma J., Tulsa 1,223
O'Rourke, Ed., Tulsa 1,472
O'Rourke, E. W., Tulsa 1,472
O'Rourke, T. J., Tulsa 1,472
O'Rourk Oil Co., Bristow 650
Osage Allegheny Oil Co., Bartlesville 303
Osage Arrow Oil Co., Ponca City 93
Osage Development Co., Bartlesville 7,203
Osage Producing & Ref. Co., Bartlesville 3,248
Oswego Petroleum Co., et al., Tulsa 1,456
Ottawa Oil Co., Wellsville, N. Y. 173
Overton, C. H., estate, Tulsa 1,608
Owatonna Oil Co., Oklahoma City 736
Owens, D. R., Chandler 3,563
Owl Oil Co., Loco 12,939
Owsley, D. L., Tulsa 1,146

P

Page, Chas., trustee, Tulsa 8,707
Page, Chas., C. W. Kingsbury and Gee. Kinney, Sand Springs 1,715
Page Bros. Oil Co., Tulsa 12,193
Panama Oil & Gas Co., Muskogee 368
Panhandle Ref. Co., Wichita Falls, Tex. 1,330
Panther Oil & Dev. Co., Bartlesville 107
Papoose Oil Co., Tulsa 111,344
Paraffine Oil Co., Houston, Tex. 8,576
Paragon Oil Co., Tulsa 5,203
Parker, D. F., trustee, Okmulgee 476
Parmenter, L. C., trustee, Muskogee 2,758
Parmenter, W. L., No. 2 Lima, O. 332
Parrish Oil Co. and Reed, Nowata 2,401
Parsons, E. E., Okemah 852
Patterson, M. R., New York, N. Y. 5,322
Patterson & Swain, Bartlesville 306
Pattison Oil Co., Tulsa 2,848
Pattrell, E., Bartlesville 209
Patsy Oil Co., Ardmore 2,094
Pauline Oil & Gas Co., Oklahoma City 8,035
Pawnee Osage Oil & Gas Co., Tulsa 2,612
Paxton Oil & Gas Co. and Theodora Oil & Gas Co., Tulsa 309
Peer Oil Corp., Tulsa 2,003
Pelham Petroleum Co., Tulsa 1,398
Penmar Oil Co., Okmulgee 7,750
Pennok Oil Corp., Tulsa 104,616
Pennsylvania Oil Corp., Warren, Pa. 232
Pennsylvania Oil & Lumber Corp., Warren, Pa. 951
Penrod, Thompson, et al, Okmulgee 1,894
Pensy Oil Corp., Tulsa 280
Perkins, F. E., Tulsa 1,319
Perkins, J. J., Wichita Falls, Tex. 1,524
Perrine, Irving and W. C. Kite, Oklahoma City 477
Pefers, Chas. B., Tulsa 5,425
Peters-Leahy Oil Co., Tulsa 679
Peterson, S. P., Tulsa 952
Pettigrove, A. H., Dewey 1,167
Petroleum Co., Tulsa 5,865
Petroleum Co., and M. H. Mosier, Tulsa 16,332
Petroleum Exploration, Sistersville, W. Va. 115
Petroleum Extraction Co., New London, Conn. 891
Phillips Oil Co., Chelsea 2,568
Phillips Petroleum Co., Bartlesville 1,700,984
Phillips & Milam, Chelsea 24,685
Phoenix Co., Okmulgee 286
Pilgrim Petroleum Co., Wichita Falls, Tex. 2,952
Pine, R. D., Okmulgee 435
Pine, W. B., Okmulgee 91,599
Pine, W. B., trustee, Okmulgee 1,292
Pioneer Oil Dev. Co., Oklahoma City 60
Pioneer Petroleum Co., Tulsa 11,686
Plains Petroleum Co., Inc. (N. T. Gilbert and Joseph Glass, receivers,) Tulsa 18,112
Plover Drlg. Co., Bartlesville 12,141
Plumb, A. O., Tulsa 767
Pluto Oil & Gas Co., Dallas, Tex. 575
Plymouth Petroleum Co., et al, Tulsa 16,223
Pochequette Oil Co., Green Bay, Wis. 251
Pollock, R. H., and Elvira J., Bartlesville 92
Pooler Creek Oil & Gas Co., Tulsa 918
Posey Oil & Gas Co., Kansas City, Mo. 85
Post Oak Crude Oil & Gas Co., Tulsa 851
Prairie Oil & Gas Co., Independence, Kans. 1,673,615
Prairie Oil & Gas Co., trustee for W. M. Graham Oil & Gas Co., Independence, Kans. 554
Prescott & Snider, Kansas City, Mo. 120
Preston, A. R., Okmulgee 358
Preston, A. R., trustee, Okmulgee 1,178
Price, Ernest, et al, Muskogee 142
Price, Ernest, trustee, Muskogee 78
Price, Sylvan S., Tulsa 474
Priddy, W. M., Wichita Falls, Tex. 737
Prince, C. V., Okmulgee 316
Probst, Geo. C., et al, Tulsa 81
Probst, Geo. C. and Jas. B. Morrison, Tulsa 172
Probst, Geo. C. and Jas. B. Morrison and S. S. Robinson, Tulsa 1,010
Producers Oil Co., Tulsa 3,596
Producers & Refiners Corp., Denver, Colo. 317,448
Pulaski Oil Co., Tulsa 153,137
Purdy Petroleum Corp., Tulsa 1,923
Pure Oil Co., Columbus, O. 718,575
Pyramid Oil Co., Winchester, Ky. 10,383

Q

Quinlan, C. P., Tulsa 3,962
Quinlan, Felix, Tulsa 124

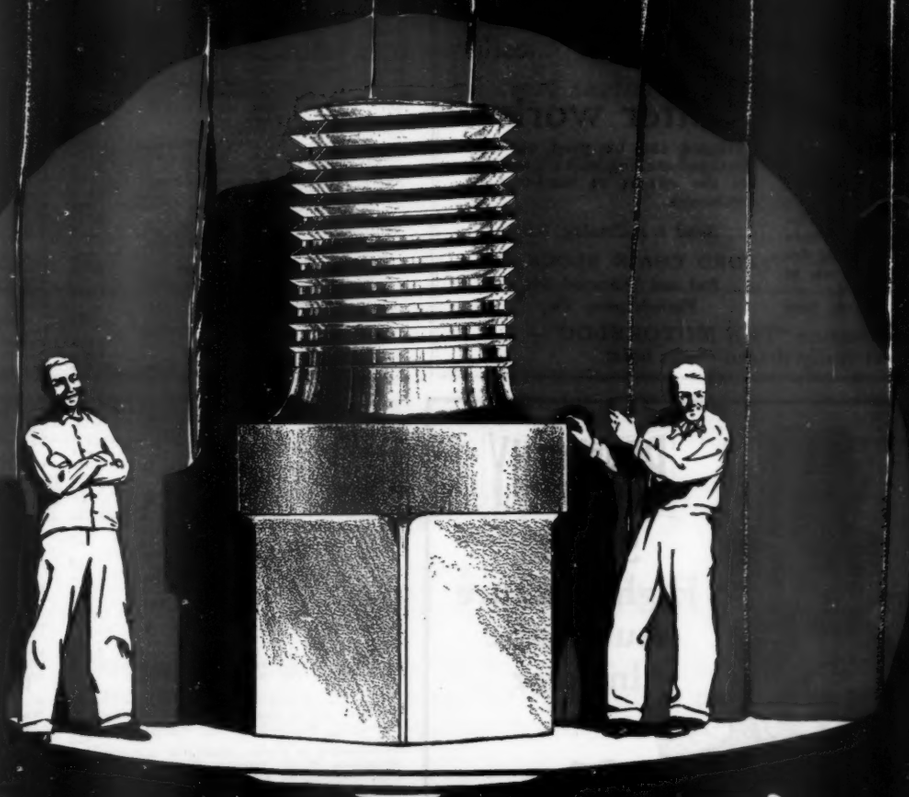
R

Rabbits Foot Oil Co., Davenport, Iowa 3,646
Ramsey, W. E. and W. R., Oklahoma City 47,816
Ramsey Oil Co., Caney, Kans. 3,794
Ranger-Gulf Corp., Tulsa 8,403
Rape, B. F. and Grace Pirtle, Newkirk 362
Ray, Tunie S., Okmulgee 375
Raycomo Oil & Gas Co., Orrick, Mo 506
Raydune, W. S., Bowling Green, Ohio 794
Red, R. D., Tulsa 201
Red Bank Oil Co., Tulsa 29,396
Redoak Oil Trust, Ardmore 5,104
Reed, H. W., agent, Nowata 931
Reed & Harmon, Nowata 4,356
Reesman, S. S., Tulsa 708
Regal Oil Co., Pittsburgh, Pa. 1,624
Regal Oil Co., Tulsa 16,228
Reinhardt, C. H., Chelsea 1,340
Reliance Oil Co., Houston, Tex. 5,126
Reliance Oil Co. of Okla., Houston, Tex. 5,101
Reno Oil Co., Sistersville, W. Va. 1,126
Reno Oil Co. and E. J. Flynn, sistersville, W. Va. 2,706
Republic Oil Ref. Co., Rock Island, Ill. 312
Reynolds, Geo. W., Admr. (Myrtle Weider estate), Cleveland 123
Reynolds Oil & Gas Co., Independence, Kans 1,288
Rex Oil & Gas Co., Winchester, Ky. 10,283
Rice, T. E., and Frank Brewster, Tulsa 235
Rice, Creek Prod. Co., Tulsa 456
Richards, A. M., Cleveland 950
Richards, Walter, trustee, Wilmington, Del. 2,475
Richmond Gasoline Co., Tulsa 671
Riddle, Mabel L., estate, Tulsa 50
Rielley, P. J., Delaware 104
Rigdon & Bruen, Kansas City, Mo. 5,266
Riner, J. J., et al, Nowata 130
Ringling, John, Ardmore 2,827
Riverland Co., Tulsa 2,698
Roberts, C. M., Okmulgee 1,175
Roberts, Esther Taulbee, Exe., Tulsa 1,159
Roberts, Geo. D., Tulsa 7,090
Robertson, Glass & Harmon, Nowata 941
Robinson, E. L. Gibson Zahniser Corp., et al, Tulsa 29,630
Robson, H. J., Tulsa 1,085
Rockland Oil Co., Ardmore 50,218
Rogers, A. H., estate, Webb City, Mo. 846
Rood, R. D., Bartlesville 1,130
Rose City Oil Co., Emporia, Kans. 878
Ross, C. O., Coffeyville, Kans. 2,503
Roth, C. E., Independence, Kans. 2,484
Roth, E. E., Tulsa 365
Roumanina Oil Co., Ardmore 106
Roxana Petroleum Corp., St. Louis, Mo. 1,088,143
Roxoline Petroleum Co., Oklahoma City 1,039
Royer, E. H., Ardmore 583
Rumbaugh, G. N., Tulsa 5,743
Ruth Fuel Co., Bartlesville 3,247
Ryan Consolidated Petroleum Corp. Tulsa 12,500

S

Salt Creek Oil Co., Nowata 850
Sanders Oil & Gas Corp., Tulsa 741
Sapulpa Ref. Co., Denver, Colo. 121,421
Savage, W. Z., Tulsa 450
Savoy Oil Co., Tulsa 19,443
Sawyer, F. L., trustee, Independence, Kans. 118
Schaff, Mrs. Gertrude E., Tulsa 387
Schermerhorn, J. B., Inc., Minneapolis, Minn. 62,306
Schermerhorn Oil Co., Tulsa 8,605
Schermerhorn-Ardmore Co., Minneapolis, Minn. 61,288
Schermerhorn-Young Co., Minneapolis, Minn. 5,266
Schlegel & Shreve, Tulsa 250
Schlingman & Larsarsky, Tulsa 2,139
Schmidt, Louis and Louisa K., Sapulpa 362
Schock, J. J., Oil & Gas Co., Okmulgee 681
Schoenfeld & Millikin, Stroud 1,375
Schoenfeld, C. H., & Son, Stroud 1,525
Schoenfeld-Chas. H. and J. F. Millikin, Geo. C. and Karl Probst, Tulsa 414
Schonwald, Dave, Blackwell 4,025
Schreiber, Theodore, Ardmore 325
Scotland Oil Co., Warren, Pa. 379
Scott, Eura, Los Angeles, Calif. 2,244
Scott, W. F., Kansas City, Mo. 45
Scott & Arrington, Walters 382
Scruggs, Finley, San Antonio, Tex. 137
Seagrave, F. S., Baxter Springs, Kans. 154
Selby, J. L., Muskogee 2,419
Selby Oil & Gas Co., Tulsa 110,839
Sellers, H. M., Bartlesville, Okla. 963
Shaffer, C. B., trustee, Chicago, Ill. 384
Shaffer Oil & Ref. Co., Tulsa 430,786
Shaffer-Mankin Oil Co., Tulsa 280
Sharp, Robt. C., Tulsa 1,386
Shear & Marcus Oil Co. and M. Shear, Bradford, Pa. 950
Shedewetz, H. W., and W. E. Carpenter, Okmulgee 186
Sheeders, Frank S., Pawhuska 331
Sheeders Oil & Gas Co., Pawhuska 1,280
Sheedy, Frank, Independence, Kans. 2,420
Sheets, Alice M., Copan 256
Sheets, E. H., Copan 258
Sheets, M. E., Copan 258
Sheridan Oil Co., Tulsa 11,878
Sheridan Oil Co., Tulsa 116
Shertzer Bros., Dewey 7,636
Shipley, John M., Nowata 48

In the Spotlight >>>>>



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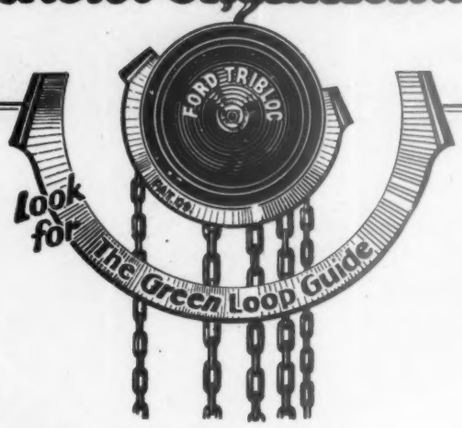

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Shipley, John M. and Louis Price, Nowata	122
Shipman & Lewis, Bartlesville	697
Shonk-Crawford Co., Tulsa	1,208
Short Grass Oil Co., Norton Kans.	884
Showalter & Cutchall, Sapulpa	207
Shriver, Mrs. M. W., Tulsa	1,175
Shuffiin, M. B., Coffeyville, Kans.	1,462
Shuler & Fischer, Tulsa	2,406
Schulthis, A. W., estate, Independence, Kans.	1,194
Sidwell Drlg. Co., Sapulpa	3,476
Siggins, Shope & Co., Coffeyville, Kans.	300
Sigmund-Weis, Walters	94
Silurian Oil Co., St. Louis, Mo.	129,024
Silver Moon Oil Co., Tulsa	986
Simms Oil Co., Dallas, Tex.	23,162
Simons, G. A., Okmulgee	11,100
Simons, I. D., Okmulgee	6,252
Simpson-Fell Oil Co., Ardmore	33,279
Sinclair, E. W., New York, N. Y.	185
Sinclair Oil & Gas Co., Tulsa	2,371,912
Skeeter Oil & Gas Co., Garber	349
Skelly, W. G., Tulsa	3,730
Skelly Oil Co., Tulsa	964,193
Skelly Oil Co. for Basic Petroleum Co., Tulsa	746
Skelly Oil Co. for M. Cassidy heirs, Tulsa	270
Skelly Oil Co. for F. J. Downey, Tulsa	771
Skelly Oil Co. for A. T. Ferrell, Saginaw, Mich.	776
Skelly Oil Co. for Arnold H. Goss, Tulsa	776
Skelly Oil Co. for R. G. Smith, Tulsa	771
Skelton, L. S., estate, Okmulgee	11,004
Skelton-Moore Oil Co., Bartlesville	7,072
Slater, R. O., Tulsa	1,559
Slick, T. B., Clarion, Pa.	427,729
Slick Oil Co., Tulsa	1,444
Sloan, E. H., Tulsa	135
Sloan, J. W., Tulsa	86
Sloan, J. W., trustee, et al, Tulsa	6,099
Slyman, Ellis, Bristow	250
Smith, Carl D., Tulsa	3,195
Smith, C. T., trustee, Okmulgee	2,952
Smith, D. M., Okmulgee	641
Smith, P. C., Tulsa	1,877
Smith, G. J., Tulsa	18,002
Smith, Paul W., Tulsa	346
Smith, Samuel H., Oil Co., Tulsa	278
Smith, T. K., Tulsa	2,125
Smith, Will H., Ardmore	3,712
Smith, Will H., trustee, Ardmore	36,958
Smith, W. R., Dewey	1,086
Smith & Daugherty, Nowata	201
Smith-Hanlon, Inc., Tulsa	2,003
Smith-Lee Oil & Gas Co., Durant	1,112
Smith, J. T., and A. P. Morgan, Sapulpa	100
Snowden-Danner, et al, Tulsa	2,724
Snowden & McSweeney Co., New York, N. Y.	41,291
Southern Crude Oil Pur. Co., Shreveport, La.	237
Southern Oil & Gas Co., Coffeyville, Kans.	2,175
South Bend Oil Corp., Tulsa	4,897
Southwestern Oil Fields Co., Tulsa	36,854
Southwestern Oil, Gas & Coal Co., Independence, Kans.	2,097
Southwestern Petroleum Co., Tulsa	317,160
Southwestern Petroleum Co., P. H. Lord, estate, Chas. S. and Henry C. Lord, Tulsa	3,130
Sperata Oil Co., Bartlesville	699
Speary Bros. & Mills, Marietta, O.	5,045
Speirs, A. J., Jenks	446
Sprague Oil Co., Ardmore	6,659
Spring Oil Co., Independence, Kans.	1,864
Stager, J. A., Nowata	907
Stager & Cornelius, Nowata	441
Stake Oil Co., Independence, Kans.	468
Staley & Wynne, Wichita Falls, Tex.	2,551
Standard Rail & Steel Co., and Duncan Supply Co., Tulsa	1,754
Standeven, H. L. and Jas. S. Terry, Tulsa	888
Standish Oil Co., Bartlesville	6,578
Stauffer, M. T., agent, Tulsa	46
St. Charles Oil Co., St. Charles, Mo.	340
Stearns Drlg. Co., Okmulgee	7,768
Stebbins Oil & Gasoline Co., Tulsa	1,522
Stein, P. H., and M. S. Musselem, Muskogee	851
Steinberger & Lucas, Skiatook	948
Stephens, B. A., trustee, Wagoner	1,008
Stephens, C. S., Coffeyville, Kans.	213
Sterling Gas & Oil Co., Columbus, Ohio	509
Sterling Oil & Gas Co., Tulsa	21,637
Steyner Oil Co., Bartlesville	15,988
Stoddard, C. H., Tulsa	1,449
Stogsdill, L. H., trustee, Tulsa	1,366
Stoner Bros., Tulsa	276
Stout, J. M., trustee, Muskogee	991
Stout, W. E., Parkersburg, W. Va.	294
Stover, J. L., Tulsa	5,743
Stover, O. P., Sapulpa	395
Straight, Preston et al, Bartlesville	1,109
Stralem, C. O., Tulsa	512
Striker, John H., Tulsa	174
Strimpie, J. A., Janesville, Wis.	501
Sturm, H. L., Ardmore	556
Sturm Drlg. Co., Ardmore	1,356
Sullivan, E. J., and W. C. Dickey, Bartlesville	808
Sullivan, M. J., Kansas City, Mo.	89
Summit Oil Co. and Sand Ford Gas Co., Bartlesville	621
Sunbeam Petroleum Co., Tulsa	1,396
Sunray Oil Corp., Oklahoma City	22,253
Superior Oil Corp., Lexington, Ky.	52,433
Suppes, G. B., R. E. and C. E., Tulsa	3,372
Sure Oil Corp. (N. T. Gilbert, receiver), Tulsa	5,961
Southerland Petroleum Co., Ardmore	5,505
Swain, Guy, Bartlesville	165
Swanson, John, Chanute, Kans., Fred Swanson, estate, Chanute, Kans., and Dan Kelly, Marietta, Ohio	1,771
Swastika Oil Co., Tulsa	223
Sweeney, Clara E., Admrx., Tulsa	82
Sweeney, J. F., & Co., Tulsa	6,430
Swindler, J. A., Berry Bros. et al, Muskogee	5,631
Swindler, J. A., & Son, Muskogee	13,443
Sykes, C. E., Ardmore	1,487
T	
Taft Oil Co., Independence, Kans.	2,981
Terrell Co., Terrell Tex.	3,138
Terriokla Oil & Gas Co., Muskogee	42
Terwilleger, C. H., Tulsa	1,008
Test Oil Co., Bradford, Pa.	4,017
Texas Co. Prod., Dept. Tulsa	1,125,936
Texas-Oklahoma Inv. Co., Independence, Kans.	1,452
Texas Pacific Coal & Oil Co., Thurber, Tex.,	110,920
Texokan Prod. Co., Coffeyville, Kans.	94
Thracker, John B., Kansas City, Mo.	610
32nd Oil & Gas Co., Ardmore	3,359
Thompson, E. N., Cleveland	476
Thompson, J. H., Okmulgee	187
Thompson, J. N., Tulsa	264
Thompson, J. N., W. M. and Roy B., Tulsa	140
Thompson, Milton, Cushing	74
Thompson, R. D., trustee, Okmulgee	596
Thompson, R. D., et al, Okmulgee	113
Thomas, R. W., Tulsa	1,862
Thompson & Jordan, special, Okmulgee	885
Thompson & Welder, Cleveland	2,936
Thompson Oil & Gas Co., Tulsa	7,734
Thurmond, T. A., Ardmore	2,798
Thurvan Oil Co., Bartlesville	579
Tibbens, C. G., Tulsa	226,582
Tibbens, C. G., et al, Tulsa	935
Tidal-Osage Oil Co., Tulsa	229,051
Tidal Oil Co., Tulsa	433,371
Tiger Mountain Oil Co., Tulsa	8,352
Tiger Petroleum Co., Tulsa	9,367
Titus, C. W., et al, Tulsa	37,971
Trainer, J. E., et al., Salem, W. Va.	174
Trainer Oil & Gas Co., Bartlesville	524
Transcontinental Oil Co., Tulsa	165,512
Travis, M. R., Tulsa	1,394
Traywick, N. E., Okmulgee	122
Trefts, John C., Buffalo, N. Y.	742
Troy, M. A., and G. W. Howard, Olean, N. Y.	146
Troy Oil & Gas Co., Sapulpa	4,671
Tull Oil & Gas Co., Yale	432
Tuloma Oil Co., Tulsa	67
Tulsa Co., Oklahoma City	12,227
Turman Oil Co., Tulsa	43,385
Turner, T. E., and T. C., Mounds	908
Tuttle-Keppel Oil Co., Hominy	1,020
Tyee Oil & Gas Co., Bartlesville	1,216
Tyler, D. M., et al, Dewey	3,319
Tyrrell, H. C., Tulsa	446
Twichell, J. A., Okmulgee	369
Twin State Oil Co., Tulsa	433,973
U	
Umburn, Gilla, Weleetka	266
Umburn, W. L., Weleetka	2,925
Union Machine Co.	45
Union Drlg. Co., Tulsa	230
Union Oil & Mng. Co., Indianapolis, Ind.	2,679
Upp, A. E., et al, Tulsa	768
Upland Oil Co., Tulsa	46
Urschel, C. F., Oklahoma City	4,299
Urschel, Flored S., Oklahoma City	4,299
Utah Oil Corp., Okmulgee	15,528
V	
Vance, S. E., Tulsa	889
Van Dall Bros., Bartlesville	1,417
Vandervoort & Hoss, Piatt	204
Van Horn, R. V., trustee, Clifton Forge, Vt.	207
Van Horn, E., Chelsea	183
Van Moss Oil Co., Bartlesville	1,191
Vee Oil Co., Oklahoma City	319
Vensel, Elliott & Vensel, Tulsa	2,337
Verland Oil & Gas Co. (N. T. Gilbert and Joseph Glass, receivers) Tulsa	4,518
Vogler, A. F., Tulsa, J. A. Lightner, Boynton, and John Swanson, Chanute, Kans.	664
Vowell-Jackson, Sapulpa	5,871
Vicmar Oil Co., Tulsa	3,057
Viersen, A. A., Okmulgee	1,332
Viersen Oil & Gas Co., Okmulgee	880
W	
Wah-shah-she Oil Co., Bartlesville	6,387
Walda Oil & Gas Co., Carlisle, Pa.	6,478
Walker, P. G., Jr., and O. K. Eysenbach, Tulsa	345
Walker Oil Co., Tulsa	1,791
Walker Valley Oil & Gas Co., Duncan	768
Wall Oil Co., Tulsa	476
Wallace, F. H., Tulsa	1,581
Wallace, Harold, bankrupt, Ardmore	3,168
Wallace, J. E., trustee, Okmulgee	937
Walsh, Julius S., Jr., Okmulgee	2,150
Walsh Oil Co., The, Tulsa	475
Walter, H. J., Tulsa	700
Wamer & Moyer, trustees, Titusville, Pa.	671
Ward Oil & Gas Co., Tulsa	2,808
Warner-Caldwell Oil Co., Titusville, Pa.	23,213
Warren Oil Co., St. Louis, Mo.	175
Watchorn, Robert, Oklahoma City	4,574
Watchorn Oil & Gas Co., Oklahoma City	69,238
Wayne Oil Co., Tulsa	1,898
Webb, R. N., Tulsa	236
Weber, Howard, Bartlesville	2,078
Weber, Obins & Beattie, Bartlesville	635
Webster, G. W., Tulsa	1,430
Weible, H. C. et al, Coffeyville, Kans.	312
Welch, F. P., Rock Island, Ill.	130
Welch Gas & Oil Co., Stillwater	509
Wells, N. D., Tulsa	1,794
Wellsville Oil Co., New York, N. Y.	1,904
Welsh, A. L., Oklahoma City	6,625
Welsh, J. D., Kansas City, Mo.	501
Wentz Oil Corp., Ponca City	1,057,118
West, J. H., Tulsa	6,629
Welsh, M. P., and C. T. Daugherty, Nowata	311
Westerly Oil Co., Bartlesville	34,989
Western Natural Gas Co., Tulsa	2,230
Western Oil Corp., Tulsa	8,190
Western States Oil & Land Co., Denver, Colo.	1,008
Westheimer & Daube, Ardmore	131,729
Westland Oil Corp., Tulsa	6,987
Wetherill, Ira G., Independence, Kans.	1,062
White Eagle Oil & Ref. Co., Kansas City, Mo.	17,090
Whitfield, B. V., Oklahoma City	3,536

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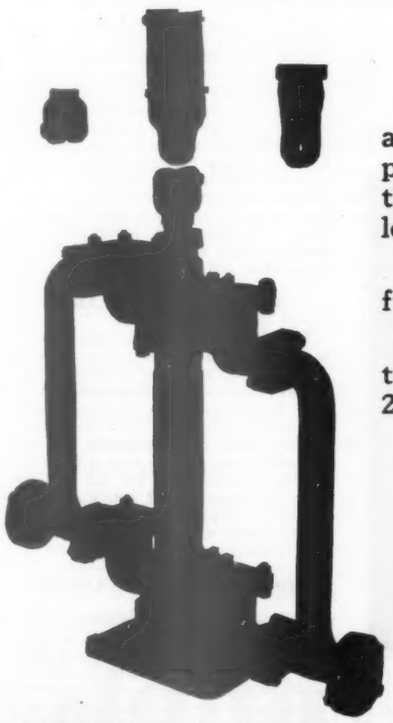
A Handy Pump in Any Field



TRANSIT *Walking Beam Pumps*

are used for pumping the oil from a well to a central tank, for emptying producers' tanks into gathering lines, or to pump water for the boilers, or the gas or oil engine. In other words, they are the handiest pumps on the lease.

All you have to do is to connect the pumps by the connection pieces we furnish, to the Walking Beam on a drilling rig, or on a pumping jack.

The cylinders are bored either 2½", 3", or 3½", either plain or brass tube lined. Stroke either 18" or 24". For working pressures up to 450 lbs. 2" Suction and 2" Discharge Flanges.

We will be glad to furnish sketches showing application.

NATIONAL TRANSIT
PUMP & MACHINE CO.
OIL CITY, PA.

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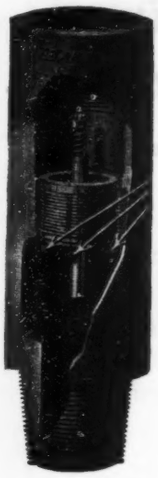
BAKER CASING SHOE CO.

No Chance Now for a Plugged String or a Wet Job—With the



New Improved Baker Drill Pipe Float

Baker Drill Pipe Float *Valves* are now made with four lugs on the bottom, which prevent the valve from seating on top of the water course opening through pin, if by chance it should become detached from valve stem. The worst that can happen to the "float" can only impair its efficiency slightly and can be remedied by merely inserting new valve. This improvement makes an old reliable appliance safer and more dependable than ever.

The Baker Drill Pipe Float is essential to safety when running long strings.

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Export Representatives: Buck & Stoddard, 30 Church St., New York City

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Whitehill, B. F., Tulsa	1,761
Whitehill, S. M., Okmulgee	1,190
Whitehill, Donovan, Hayden and Whitehill, Tulsa	759
Whitehill, Donovan and Whitehill, Tulsa	835
Whitehill & Glass, Tulsa	794
Whitehill, Howard J., Tulsa	146
Whitehill & Smith, Tulsa	1,326
Whitehill & Weible, Tulsa	627
Whiteside, R. B., Duluth, Minn.	251
Whittier, M. H., Tulsa	734
Whitmer, C. J., trustee, South Bend, Ind.	71
Wickett, F. H., Shreveport, La.	6,973
Wickett, K. L., Tulsa	2,468
Wigton & Long Co., Okmulgee	50,375
Wilcox, Fred L. and George C. Schmuck, Tulsa	348
Wilcox, H. E., Indianapolis, Ind.	48
Wilcox, H. F.-Pampa Oil Co., Tulsa	7,176
Wilcox, H. F. Oil & Gas Co., Tulsa	235,351
Wilcox, H. G., and E. M. Oswalt, Tulsa	94
Wilcox, Oswalt & Wilcox, Indianapolis, Ind.	486
Wilhoit, Ethel J., executrix, and R. M. Jones, trustees, Kansas City, Mo.	2,143
Wilhoit, J. C., No. 2, acct., and Mrs. J. C. Wilhoit, Kansas City, Mo.	515
Wilson, J. H., Chicago, Ill.	221
Wilson, John W. and Louisa, Loco	392
Wineland Oil Co., Boynton	2,191
Winemiller, J. H., Tulsa	181
Winkler & McQueen, Inc., Duncan.	5,269
Winona Oil Co. of Delaware, Tulsa	75,750
Winters, M., Independence, Kans.	769
Winters Oil Co., Bradford, Pa.	1,012
Wise, W. A., receiver, Sapulpa	909
Wise & Jackson, Sapulpa	6,385
Wiser Oil Co., Bartlesville	73,091
Wittmer property, trustees, Pittsburgh, Pa.	20,753
Withington, Margaret M., Marietta, Ohio	330
Withington Oil Co., Dewey	2,169
Wolfe, Frank, trustee, Tulsa	346
Wolfe Oil Corp., Bristow	9,195
Wolford, J. N., Tulsa	107
Wolverine Pet. Corp., St. Louis, Mo.	285,031
Wood, T. J., Tulsa	2,866
Wood Oil Co., Tulsa	20,794
Woodard, George E., Nowata	850
Woodward, Burkett & Woodward, Nowata	2,590
Woodward & Woodward, Nowata	1,696
Wooton, Billy and H. F. Hooks, Cleveland	425
W. P. Oil & Gas Co., Cleveland	925
Wright, W. T., Tulsa	99
Wrightsman Pet. Co., Tulsa	2,296
Y	
Yeager Oil Corp., Okmulgee	1,775
Young, George L., Dewey	570
Z	
Zahn & Crawford, Tulsa	2,151
Zola Oil Co., Tulsa	20,008
SUPPLEMENTAL	
Benage, F. L., Delaware	1,525
Chalfant, C. C., trustee, Sharpsburg, Pa.	150
Franklin Oil & Dev. Co., Nowata	580
Globe, B. G., Tulsa	918
Harrivo Oil & Gas Co., Oklahoma City	1,630
Holmes, B. F. & Co., Lyons, Kans.	555
Holmes Oil Co., The, Lyons, Kans.	86
Hughes, T. J., Cushing	125
Ideal Oil & Gas Co., Ardmore	1,470
Lima Oil & Gas Co., Bartlesville	3,365
Madden & Madden, Tulsa	4,638
Painter, J. W., Nowata	300
Painter, Stager & Higgins, Nowata	47
Plymouth Oil & Gas Co., Henryetta	401
Read, William A., Tulsa	4,455
Sitrin Brothers, Tulsa	5,166
Thlocco Oil Co., Tulsa	30,135
Van Eman, G. L., Jennings	2,610
Wright, C. H., Oklahoma City	153
Total	$9,861,255

ELECTED VICE PRESIDENT

E. J. Gorman

At a recent meeting of the board of directors of the Twin State Oil Co., E. J. Gorman, who has been general manager for some years past, was elected a vice president. Mr. Gorman has been with the Twin State Oil Co. for eight or ten years, beginning in a minor capacity and working up to his present position. This company is the Oklahoma subsidiary of the Sun Oil Co., of which J. Edgar Pew is vice president and general manager. Other officers and directors of the company were re-elected.

FILE RATE COMPLAINT ON REFINERY PRODUCTS

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 17.—In a complaint filed by the Standard Oil Co. of Kentucky vs. Alabama Central and others, it is alleged that rates on petroleum products from its refineries at Louisville and Baton Rouge to points in Alabama, Georgia, Florida and Kentucky are unjust, unreasonable, excessive, unjustly prejudicial and discriminatory. An attack is also made upon the basic principle on which the rates are predicated and for the purpose of securing a readjustment on future traffic and the traffic of its competitors from the north Texas and Mid-Continent Field affected by the rate factors east of the Mississippi River and Mobile and Pensacola. Attention is called to the tariffs made effective April 1, 1922, which materially increased and reduced rates between the points involved in this complaint; to the denial of Fourth Section Relief on August 1, 1921, at which time the defendant carriers asked for authority to operate lower rates from Baton Rouge to Ohio River crossings than the rates contemporaneously in effect to the Southeast.

Attention also is called to the fact that there is no general or uniform basis for the making of commodity rates on petroleum products for local and joint application from Ohio and Mississippi River crossings, gulf ports and south Atlantic ports to stations in destination territory involved and between such points, that has had the approval of the commission and that in the absence of a comprehensive record no relief seems possible, nor can it be obtained under piecemeal adjustments. It is suggested that relief cannot be secured until the commission upon complaint and formal pleading enters upon a hearing and general review of the lawfulness of petroleum rate adjustment in Southeastern territory and as it applies from Ohio and Mississipi River crossings, gulf ports and south Atlantic ports considered in its relation to the through and combination rates from refining and producing areas west of the Mississippi River, from which the rates are made by lowest combination over the so-called Mississippi River crossings. The commission is asked to establish and apply for the future rates on petroleum and petroleum products to the destination territory and the Southeastern territory from Ohio and Mississippi River crossings, gulf ports and south Atlantic ports rates which will be just, reasonable and nondiscriminatory.

VENEZUELA OIL LABOR

WASHINGTON, D. C., May 15.—Labor scarcity, so marked a few years ago in Venezuela, has been overcome according to reports to the Department of Labor. Employers report an ample supply, skilled and unskilled. This state affects the oil industry in Venezuela only to a limited degree, because only a small portion is unskilled, and for the first time since the beginning of active operations in the oil fields, this ample supply of native labor, skilled and unskilled, has been available.

MOTORSHIPS AND TANKERS

Lloyd's register of shipbuilding returns for the quarter ended March 31 show that there are 36 steamers and motorships, each over 1,000 tons, with a total tonnage of 247,510 tons, under construction in the world for the carriage of oil in bulk. Of these tankers, 15 of 91,810 tons are under construction in Great Britain and Ireland, 8 of 57,000 tons in Holland and 5 of 44,000 tons in Germany.

The Cross Cracking Process

(1) Profits come from Gasoline.
(2) Profits are greater from Cracked Gasoline.
(3) Profits are greatest from Cracked Gasoline Manufactured by the Cross Process.

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10 Years on a Pipe Line Pump—Plungers Still Polished

Back in 1916, "JOHN CRANE" Metallic Packing was first tested in the oil fields of Texas, Oklahoma, Louisiana and California, on oils, crudes, and distillates, principally for pipe line plunger pumps. Some of these installations are still in service. That's 10 years ago.

Today the use of "JOHN CRANE" Metallic Packings is worldwide. Mexico, Venezuela and India each requisition their share. The great oil fields of the United States use thousands and thousands of pounds in the refineries, with the producers and on the pipe lines.

Why?

This flexible metallic packing is ideally suited for oil and gas. The more oil it comes in contact with, the better it works. Friction is reduced to the minimum; power is saved, and rods, shafts and plungers become and remain polished.

"JOHN CRANE" is a universal packing. It is excellent on steam rods of engines and pumps; air rods of compressors; plungers and shafts of water pumps. Savings in repairs and replacements are large. It is mechanically correct. Specify "JOHN CRANE." Supply houses have it in stock.

This is only one of the Texas Pipe Line Stations packed completely with "JOHN CRANE" Flexible Metallic Packing. This installation is 5 years old. Dallas Station is 10

Use "JOHN CRANE"—It pays.

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"John Crane" Metallic Packing

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Save a big percentage by using our guaranteed used casing in all sizes, warranted new in grade and workmanship of threads, collars and protectors. Our prices show you a big saving.

New and used pipe in all sizes, rigidly inspected and fitted with new threads and couplings. All guaranteed in first class order. Ready for shipment now. Get our quotations.

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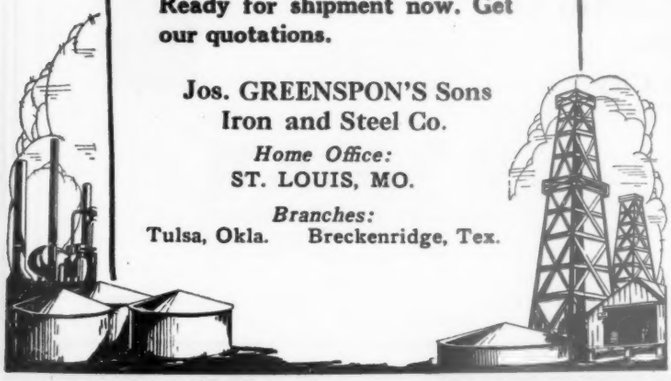
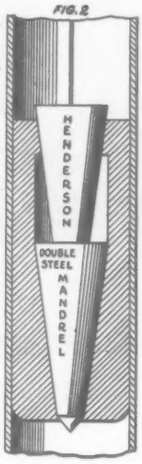


HENDERSON-DOUBLE-STEEL-MANDREL LEAD-PLUG

Patent Applied For

FIG. 1

FIG. 2



Something new and superior to any plug on the market, in that the double mandrel will expand the lead body for its entire length, while a single cone mandrel type will expand the lead body only at the top. A little study of the cut which shows before and after will convince the practical producer of the advantage of the double mandrel.

Manufactured by

The McJunkin Supply Company

Charleston, W. Va.

DOCTOR GOULD ON RELATION OF OIL AND GAS TO MODERN CIVILIZATION

By Dr. Charles N. Gould*
Director, Oklahoma Geological Survey

In Tulsa, the oil capital of the world, I am asked to speak on "The Relation of Oil and Gas to Modern Civilization."

Petroleum is an extremely complex mixture of organic compounds, chiefly hydrocarbons, that is to say compounds of hydrogen and carbon, but sulphur, oxygen and nitrogen are also present in small amounts. It contains, therefore, the five chemical elements of the first importance in life processes, carbon, hydrogen, oxygen, nitrogen and sulphur—a circumstance that suggests at once an organic origin, and determines the important role that this substance is due to play in filling the needs of man.

If crude petroleum is exposed to the air, it gradually thickens until a solid residue is left. The first product given off is natural gas; then various liquid components evaporate in the order of their lightness; and the final residue is composed largely of either paraffin wax or asphalt which are solids. Petroleum is thus seen to be a mixture of different liquids dissolved in one another and holding in solution, also, natural gas and solid substance.

By a simple method of distillation in a refinery crude petroleum is separated into some six or more major fractions. Ordinary Mid-Continent crude petroleum will furnish about 4 per cent of gas, 25 per cent of gasoline, 15 per cent of kerosene, 40 per cent of gas oil which, when "cracked," will yield more gasoline, 12 per cent of paraffin and lubricating oils and 4 per cent of coke.

Chief Uses for Oils

What are the chief uses of petroleum, and how do these uses influence our modern material civilization? The best classification I have so far seen suggests six chief uses for petroleum, namely:

Petroleum, this elusive complex, but tremendously vital natural resource, is:

1. The source of gasoline, our dominant motor fuel.
2. The source of lubricating oil.
3. The source of kerosene, one of the world's chief illuminants.
4. With coal and natural gas the source of fuel.
5. The source of asphalt used for paving and roofing.
6. The starting point of the oil by-products industry.

When one casts about to find the greatest invention of modern science, and the one that has had the most salutary effect on our material civilization, he is confused by the multiplicity of these inventions. There are so many things which have had a profound effect on modern life that one can scarcely enumerate them. With the possible exception of the recent development of electricity, the invention of the internal combustion oil and gas engine is probably the most important invention now functioning.

The invention of the steam engine had a wonderful effect upon modern life. This method of utilizing power, by transforming heat into motion, revolutionized human progress. The steam railroad, the steamship, the steam-powered factories, with their thousands of interrelated processes, all depended directly or indirectly on the invention of the steam engine. But the steam engine is a very wasteful piece of machinery. Only about 15 per cent of the heat units that go into the fuel box ever come out in the form of usable power.

Not less important than the steam engine has been the invention of the internal combustion engine, whose power is derived from the burning either of gas or of vaporized oil. The internal combustion engine is an "explosion" engine, in contrast with the steam engine, which is an "expansion" engine.

There are those who believe that the greatest factor in our modern civilization is the automobile. It is hard for us to realize that so recent is the invention of the automobile that the men who had most to do with the development of the gasoline engine, the "power plant" of automobiles, are still living. The automobile has practically annihilated distance.

Twenty-five Years Ago

Let me cite an example:

The first year I came to Oklahoma, in 1900, a quarter of a century ago, I started out in company with three other men in a covered wagon drawn by two ponies to make a geologic reconnaissance of what was then the Territory of Oklahoma. We traveled all summer, studying the various rock formations in northern and western Oklahoma, camping at night by the roadside. If we averaged 20 miles a day we were doing well. I verily believe that I could start out Monday morning by automobile and visit every camp which we made that summer, and be back home by Saturday night.

Not only the automobile, but also the airplane, the tractor, the truck and the stationary gasoline engine are directly dependent on the invention of the internal combustion gas engine.

Almost as important as the automobile engine is the Diesel oil engine, which was invented by a Holland scientist, named Diesel. This engine will utilize any mineral, animal or vegetable oil in internal combustion. Oil engines using crude petroleum are now rapidly taking the place of steam engines in industry. Most of the navies of the world use the Diesel engine and its field of usefulness is being constantly broadened.

Lubrication

The second use for petroleum products, and one which is of extremely great importance, but perhaps not so conspicuous as others, is for lubrication. Whatever the type of machine lubrication is necessary to counteract friction. Everything from the most delicate watch to the largest locomotive needs constant lubrication. In the early days animal and vegetable oils and greases, such as tallow, lard, sperm oil, castor oil, or olive oil, were used, but today practically the only source of lubrication for heavy machinery is petroleum.

There are scores or possibly hundreds of varieties or grades of lubricating oil. Certain oil fields yield peculiar types of oils. A story is told of a certain well in the Muskogee Field of Oklahoma which was found to produce a peculiar kind of plum-colored oil, only a few barrels a day, but when refined this oil was found to yield an oil suitable for lubrication of watches, clocks and chronometers. So this oil, instead of selling for a few cents a gallon was sold for many dollars a gallon. When the well became exhausted the refiners were put to it to find another oil to take its place.

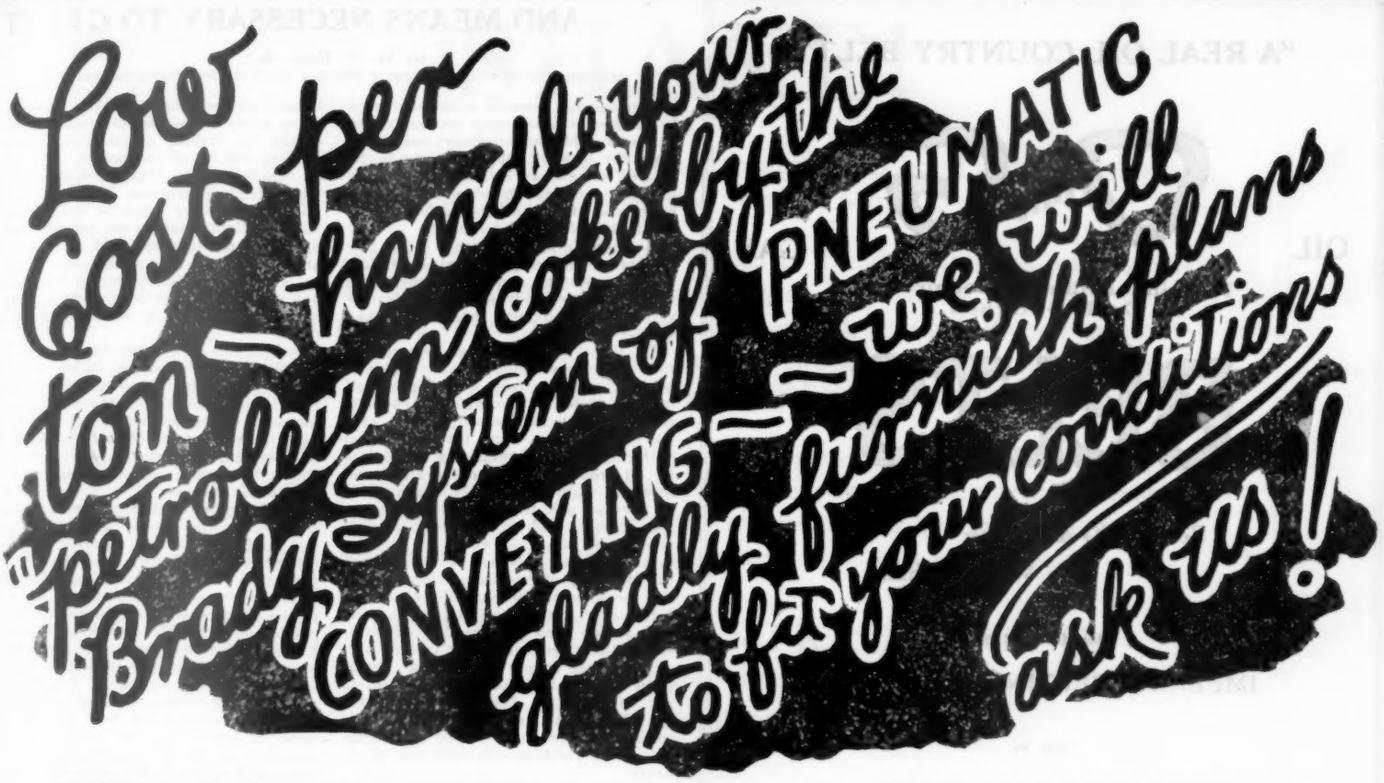
We may possibly find a substitute for gasoline although we have not yet done so. There are those who believe that alcohol may eventually take the place of gasoline as a motor fuel. Whether or not this is true the fact remains that no substitute for lubricating oil is yet in sight.

It is rather surprising to learn that, notwithstanding the remarkable development of electricity, half of the people of the United States today use kerosene lamps.

And not only in this country is kerosene used. The kerosene lamp has gone all over the world. I was recently talking to Doctor Chan, a noted Chinese student, who is now in Oklahoma studying American methods for producing petroleum, and he told me that practically every home in China has a kerosene lamp. The Standard Oil salesman vies with the Christian missionary in visiting and making light the dark places of the earth. The back lands of South America, darkest Africa, snow-clad Siberia, the

(Continued on Page 232)

*Before Southwestern Library Association, Tulsa, Okla.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"A REAL OIL COUNTRY BELT"

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SECOND "CROP" OF OIL NEEDED AND MEANS NECESSARY TO GET IT

By W. T. Thom, Jr.*
Geologist in Charge, Geology of Fuels, United States Geological Survey

Fundamental research is like seed sown by the husbandman; some becomes stifled by unfavorable surroundings; some perishes for lack of support; some is destroyed because workers are tempted by financial rewards offered elsewhere, and some brings forth an hundred fold, giving the means of life and comfort.

Research in applied science is the harvesting of the crop planted by fundamental research, and yields the grain which is immediately and profitably convertible into products satisfying human wants.

To these two phases of research as they relate to petroleum I am to address myself tonight, chiefly confining myself to those fields of fundamental research connected with the discovery of oil; with its extractability from the earth, and with the means for producing substitutes for oil products. Were our available reserves of natural petroleum inexhaustible or were we able to make artificial petroleum cheaply and in unlimited quantity, research in this field would be unnecessary and the questions of reserves, of the efficiency of our motor cars, and of the consumption by our oil-fired household heaters, would be matter of theoretical rather than of practical interest. But as has frequently been pointed out, our national supply of available petroleum is very far from being unlimited, nor have we yet discovered the secrets by which cheap and satisfactory substitutes for oil products can be made artificially in anything like sufficient abundance.

In the light of persent knowledge, the situation as regards our oil supply may be roughly summarized as follows:

Ten years from now, if an adequate program of research be carried out, we may find ourselves possessed of even better and cheaper supplies of motor and household fuel than we now enjoy. On the other hand, 10 years from now, if no such research program be carried out, we may find that supplies have so far diminished and that prices have risen so sharply that the motor car and the oil heater will be passing beyond the reach of the citizen of average means.

There can be, I believe, no slightest doubt as to which alternative the public will choose once the nature of the choice is generally understood, and in as much as national prosperity and security, as well as individual comfort and need, are united in this single issue, I feel that the organizations sponsoring the Oil and Gas Power National Conference are performing an outstanding service to the nation in helping to call popular attention to the situation, and to the simple measures, which, if speedily adopted, may reasonably be expected to safeguard such vital public and private interests.

What then are the researches to be undertaken in order that the nation may feel some assurance that its growing needs for liquid fuels may continue to be satisfied, price as well as quantity and quality being considered? They are of two sorts, researches in applied science to complete the harvest of the first crop of oil from the nation's oil fields, which should be pressed forward with due diligence, and second, and more particularly, fundamental researches in pure science which must be begun now in order that their crop may be ripened before the need for it has become pressing.

In the applied science of oil geology, it need not be doubted that important contributions will be added to the wonderful achievements of the past decade, and many more oil fields will be found by the perfection of methods now in use. Only recently we have seen a successful application of geophysical principles to the discovery of oil, as has been demonstrated by the disclosure of a considerable number of hidden salt dome fields in the Gulf Coast belt by the use of the torsion balance and seismograph. And the developing study of microscopic fossils found during the drilling of oil wells is also yielding results of outstanding practical importance. Many other lines of present and indicated progress in the applied science of geology could be enumerated, but time limitations do not permit. Suffice it to say that the field contains an army of capable and enthusiastic workers who have the wholehearted confidence and support of their companies, and important results are to be expected from them.

Second among the sciences applied to petroleum is that of the driller and of the petroleum engineer, who share with the geologist credit for the tremendous increases in the production of oil which have taken place in the last decade, and more especially during the past five years. But a few years ago, many drillers regarded the keeping of an accurate well log as little better than a sheer waste of time. Now the reverse is largely true, and the fact that many oil fields are now discovered by geologists solely on the information yielded by well logs testifies to the importance of accurate records and to the effective service rendered by present-day drillers. The petroleum engineer, by the perfection of apparatus for taking cores of formations penetrated; by devising methods of controlling tremendous pressures; by developing inmproved methods for regulating the rate of flow of wells in order that the energy of gas dissolved in the oil may be better utilized; and in many other ways, has added materially to the proportion of the oil extracted from the sand as compared with former years.

And just as the engineer has made it possible, first to drill to depths of 3,000 feet, then 5,000 feet, and now to nearly 8,000 feet, he may by further research make it possible to drill to 10,000 feet, which will perhaps be sufficient for the exploration of the deepest levels at which oil may occur. With each increment in practicable drilling depth, a new reserve of oil has been transformed from a potential to an available one, and the contribution of the engineer in this direction has therefore been, and for a time will continue to be, an important one. Actual mining of oil sands has also been begun, and if its costs are not too heavy, may become a very important operation.

Changes in Refining

But probably the most important of the researches in applied science waiting to be carried through to completion are those in the fields of physics and chemistry, particularly the latter. By perfecting processes for "cracking" fuel oils and heavy crudes into gasoline, the chemist has vitally modified the economic structure of the petroleum industry, and has in effect practically doubled the supply of crude oil available for gasoline manufacture, with a corresponding diminution in the volume of fuel oil which must be sold in competition with coal. And as fuel oil has been transformed by chemistry from a mere by-product into a raw material for gasoline manufacture, the near future may see the price of fuel oil independent of that of coal and governed only by the demand for gasoline, or for fuel oil for special purposes.

It is within the realm of possibility that commercially profitable methods may now be devised for effecting the chemical combination of the molecules of natural gas, or of the "fire damp" from coal mines, to form artificial gasoline, and it likewise seems quite possible that asphalts and asphaltic materials, which are oxidized and "dried up" oils, can be reconverted into liquid form by suitable treatment with hydrogen. Perhaps the method for making synthetic alcohol from artificial gas, now practiced in Germany, may be developed so as to be a commercial source of motor fuel; and the liquefaction of coal, the distillation of coal, and the retorting of oil shale, all are

*Before the Oil and Gas Power National Conference meeting, Washington, D. C.

SHAKE!

The Oklahoma Contracting Company extends its hand in cordial greeting to the visiting gas men—and with it goes the heart.

It is interesting to note that the custom of handshaking as an expression of cordiality has come to us from the ages of chivalry when the cumbrous iron mail, in which the Knights were cased, prevented their embracing, and when with fingers clothed in steel the simple touch or joining of the hands was the natural resort to express friendship.

However, it is of little matter what the origin, the significant thing is that such a custom prevails, providing for everyone an outward expression of their friendly feelings, and that the custom is most becoming of such an occasion as this in affording us the opportunity to say welcome.

THE OKLAHOMA CONTRACTING CO.

608 Mayo Bldg.

Tulsa, Oklahoma

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60 SEATS

The Waters Gauge Cock

It's a guage you can rely on—under any test. Special composition disc (not babbitt)—tests in Kansas City laboratory showed a melting point for this metal of 457 degrees Fahrenheit. Non-corrosive monel metal nozzle is always clean—self sealing when handle is released—it can't leak or spit.

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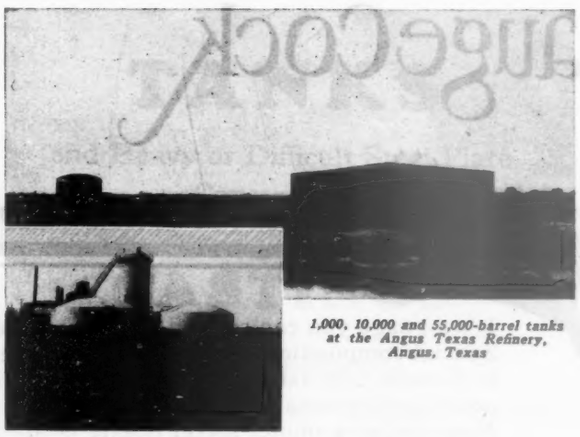

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lines from any one of which important developments may come.

In practically all of these investigations for making substitutes for oil, the work of the chemist must be backed by that of the geologist and engineer. Whether it be natural gas, asphaltic material, coal, or oil shale, that is to form the raw material for the manufacture of synthetic motor fuel, both geology and engineering must be called upon to point out and provide the needed supplies, and physics as well as chemistry must be employed in the processes by which the desired transformation is to be accomplished. However, conceding the possibility that discoveries may be made by which any or all of the raw materials mentioned may become the source of cheap motor fuel, or of fuel oil, we must yet face the probability that no one of them can be counted on to yield the billions of gallons of motor fuel used annually in this country except at price levels vastly higher than those now obtaining. This, not so much because of our inability to make any or all of the chemical transformations suggested, as because it has not yet been demonstrated on an adequate scale that the costs of these transformations can be so reduced as to make their products commercially profitable at non-prohibitive prices.

Hope in Chemistry

We may therefore say in summary that this last phase of applied science, namely, chemistry, holds out hope, though as yet no real assurance, of adding abundantly to our supply of cheap liquid fuel, whereas the two earlier phases of applied geology and petroleum engineering are occupied with harvesting the remainder of our crop of petroleum, which presumably will be fairly well completed within a few years.

If this analysis of the situation be correct, and we are so to speak arriving at the point where the last of one harvest is being threshed and hurried to the mill, is it not the course of prudence to hasten the planting of another crop, which must be done through primary research. And if another crop is to be planted, is it not a matter of the simplest common sense to select not just any old seed, but the very best seed available? And after the seed is selected, is it not essential that it be put in properly prepared ground and allowed to grow there until mature?

To plant poor seed, in poor ground, and then dig the plants up and move them around before they are matured, not only leads to no useful results, but involves actual waste of time and effort such as no sensible farmer would think of—and yet such conditions will arise if research workers be recruited at random, be given inadequate means for their work, and are so poorly paid that they leave their tasks uncompleted to take better places elsewhere.

In order therefore to prepare for the new crop in petroleum research in an intelligent and productive way, the geologist should select the soil best suited for the purpose, the chemist should supply the fertilizer, the engineer, the necessary machinery and tools, and the paysicist the power to draw the plow, the harrow, and the drill. Effective cooperation of all four phases of the work is indispensable to success, and all will have to be able to contribute on a like scale if maximum results are to be obtained. But however desirable cooperation and the coordination of plans may be, it is not to be accomplished without direction and without effort, and it seems almost providential that we have in the National Research Council an agency by which and through which the cooperative planning and execution of an oil research program presumably may be put through.

Our first "crop" of oil of which I have been speaking, is that recoverable from discovered oil fields by known processes operating under current conditions of costs and prices, and I have spoken of a second "crop" of oil, not because nature renews her stores of petroleum within a span measurable in terms of a man's lifetime, but because with advances in science, geological, engineering, geophysical and geochemical, new oil fields can be found at nonprohibitive cost (as has

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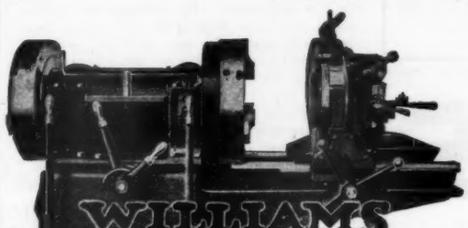

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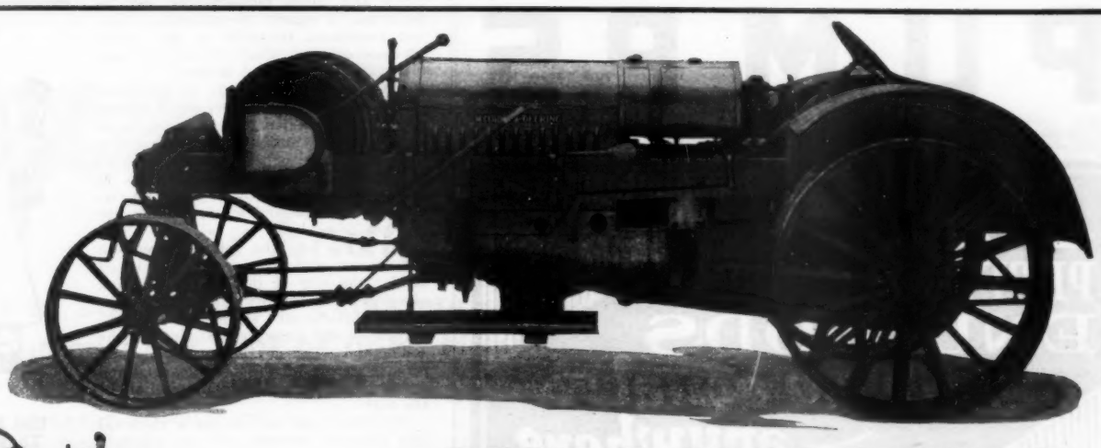

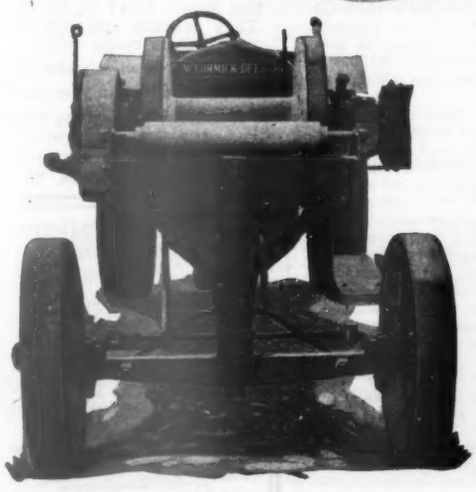

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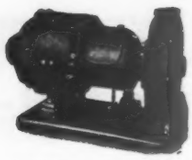

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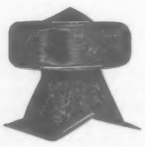

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recently been demonstrated in the Gulf Coast), and the great stores of oil not now profitably recoverable from the known sands of known oil fields can be more and more transformed into a reserve actually available at a nonprohibitive cost.

To produce our second crop of oil, we must therefore overcome the mounting difficulties of exploration and oil production, and our work must be based upon a new and far more precise determination and understanding of what has happened and of what may happen in the microscopic pores and openings of oil-bearing sands. Unless we can learn what actually takes place between molecule and molecule of oil, gas and inclosing rock; perhaps even between atom and atom; or between electron and electron; we may find that we have attempted to apply rule-of-thumb methods where such rules will not apply, and have caused far greater losses than gains.

Specific Needs

The things we specifically need to determine with far greater accuracy are:

(1) What are the properties and interrelationships of oil and gases as they occur in nature; from what have they been formed; and by what processes have they been formed? By what natural processes are they destroyed, and what recognizable traces do such destructive processes leave? By these we may determine whether certain lands are definitely barren of oil, or whether they may possibly contain oil, and hence be worthy of further geological exploration.

(2) How far may oil migrate during the geological processes of accumulation; what factors cause migration; what changes does migration produce in oils; and what factors not yet understood contribute to the local concentration of migrating oil and gas into valuable "pools?" If we can determine these facts and factors, the drilling of many dry holes can be avoided and new oil fields can undoubtedly be found.

(3) What geophysical guides, based upon factors such as gravity, conductivity and earth temperatures, can be developed to suggest the presence of hidden conditions favorable to the occurrence of oil, and what will be the limitations of each method devised?

(4) Does oil occur only in anticlines formed during specific periods of folding within given regions, or may oil occur in any of these anticlines? And can geologic theory be so perfected as to afford a helpful guide to the exploration of areas where surface rocks afford no significant outcrops and where drilling has not yet been done?

(5) What are the relations between the amount of pore space present in oil sands; the size of the pores; the kind of oil and gas present; the kind of minerals composing the sand; and the temperatures and pressures existing in the sand; and what do these relations signify in terms of the best spacing and operation of wells for the extraction of the oil?

(6) What are the relations, chemical and physical, between oil and oil field waters, how may their relations be best controlled, and under what conditions is the water an aid rather than a handicap to oil recovery?

(7) What are the fossil organic substances which yield oil when distilled or treated with solvents, and what kinds of products does each process yield? Do decompositions take place in one step, or in several? Can they be accelerated or modified in an important way by catalysts? And as a final conclusion, what methods and what mineral raw materials (coal, oil shale, asphalt, natural gas etc.) can best be used for making substitutes for oil.

As I picture it, we are trying to create, not a simple building such as has in the past been adequate for petroleum research, but a skyscraper structure, built upon a foundation of geology, supported by a steel skeleton of technology, and rising by successive tiers of stories through research stages corresponding to exploration, production, transportation and refining.

The National Research Council may

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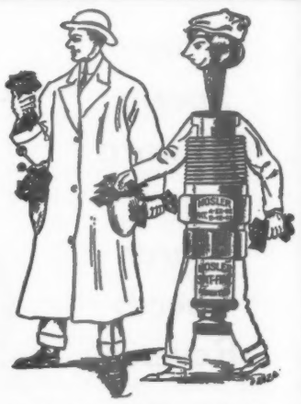

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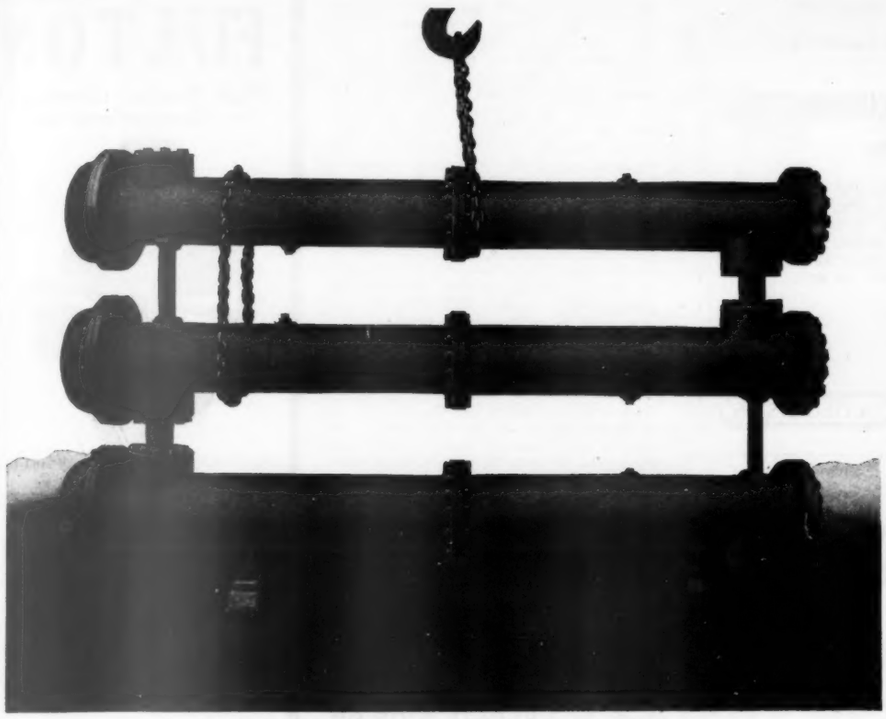

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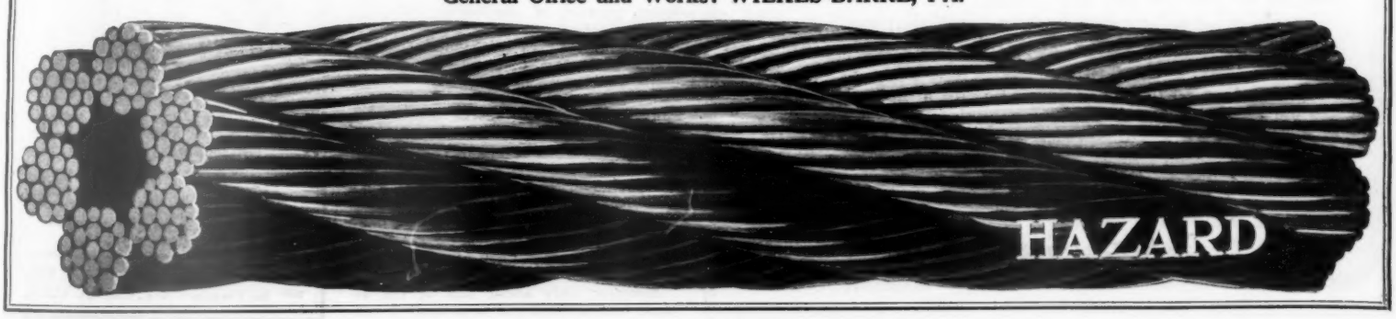

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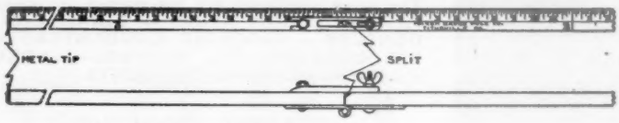

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The OIL and GAS JOURNAL
Tulsa, Oklahoma

well serve as the firm of supervising architects to plan and direct the construction of this building, governmental agencies, such as the Geological Survey and the Bureau of Mines may serve, respectively, as the masonry of the foundation and as the part of the steel frame below the level of the sidewalk (and hence below the field of direct commercial activity), and the newly endowed research organization of the American Petroleum Institute may afford the framework for the structure within the commercial field, its activities being rounded out by those of the American Association of Petroleum Geologists, by the universities, by the American Chemical Society, and by the several engineering, physical and geophysical societies and organizations interested in petroleum researches.

It is obvious that such a structure cannot be erected without painstaking planning, without careful supervision, and without the most accurate fitting of the framework to the foundation and of the walls and floors to the framework. Its cost in both time and money will be considerable, but will be infinitesimal when compared with savings it will accomplish both in terms of dollars, and in terms of a limited and precious mineral resource. Its maximum cost can be but a tiny fraction of a cent per gallon of gasoline, and if profits to the oil industry and the enjoyment of automobiles and oil heaters by the public are worth insuring, such a program of petroleum research presents both an excellent and exceedingly cheap insurance policy.

DOCTOR GOULD ON RELATION OF OIL

(Continued from Page 224)

waste places of Australia, the islands of the sea, are today being lighted by American kerosene, and kerosene is a product of petroleum. In fact it was the first product to be refined from petroleum.

First Western Refinery

When the first oil refinery west of the Mississippi was established in St. Louis in the early seventies, oil, in barrels, from the Pennsylvanian fields was barged down the Ohio River and up the Mississippi to St. Louis. The barrels were unloaded on the wharf and hauled in wagons to the refinery. Only one product, kerosene, was made in this refinery. All other products, including gasoline and lubricants, were not considered valuable, and were emptied into the sewer.

In many parts of the country natural gas and fuel oil are driving coal out of the market. As an example, take the three States of Kansas, Oklahoma and Texas. By far the greater number of the larger cities in these three States are today lighted and heated by natural gas. Many of the great manufacturing plants, such as glass plants, cement plants, brick plants, zinc smelters, and the like in these States use natural gas. Gas is the most nearly an ideal fuel given by an all-wise Creator to man, easily handled, with no ashes and no extra work. Fuel oil is in use for heating houses and office buildings, for locomotives and for factories, and its use is on the increase.

Asphalt Resources

Another use for petroleum products is the solid or viscous form known as asphalt. Asphalt has been described as crude oil with the oil all gone. As has been said, asphalt is, next to coke, the latest product of distillation. Asphalt may be either natural or artificial, and both kinds are used in paving.

One of the most famous asphalt deposits in the world is from a lake of about 100 acres on the island of Trinidad. In the United States, asphalt occurs in Kentucky, Texas, Utah, California and Oklahoma. However, a considerable amount of the asphalt used in the paving of the streets and highways is derived directly from the oil refinery. So that both the fuel which propels the motor cars and the smooth-surfaced road on which they travel are petroleum products.

However, only about half of the asphalt used is employed in paving. A con-

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siderable part is utilized for roofing, and for paints of various kinds, as well as for the manufacture of hard rubber.

One use for petroleum, yet in its infancy, is that it forms the starting point for oil by-products industries, a branch of chemical manufacture that offers almost unlimited possibilities. He would be rash, indeed, who would dare predict what will eventually be developed along this line. Practically all of the hundreds of dyes, medicines and pharmaceuticals, derived from coal tar have been developed in the research laboratory. My chemical friends tell me that the same materials, that until recently came entirely from coal tar, may be secured as by-products of petroleum. It is a pleasure to record the great increase in interest in chemical research in America—a valuable by-product of the World War.

Many medicinal products and household articles are now derived from petroleum, such as paraffin, vaseline, ichthyol substitutes, and numerous pharmaceutical oils.

There are on the market today, several hundred by-products manufactured from petroleum, but this represents only a very small portion of the possible derivatives. It has been estimated that over 100,000 possible compounds may be made from petroleum. In other words, there are 100,000 possible petroleum derivatives. No one today knows how many of these may eventually become commercially valuable.

CONTRACTS AWARDED FOR NAVY'S GASOLINE

By Charles E. Kern
Washington Bureau,
The Oil and Gas Journal

WASHINGTON, D. C., May 15.—The Navy Department has awarded contracts for furnishing gasoline for the Navy as follows:

Portsmouth, N. H.—Atlantic Refining Co., 50,000 gallons, (6 months), in tank cars, $.1435.

Hingham, Mass.—Beacon Oil Co., 5,000 gallons, for 1 year, $.151.

Chelsea, Mass.—Beacon Oil Co., 7,200 gallons, for 1 year, (in tank wagons), $.1425.

Boston, Mass.—Beacon Oil Co., 120,000 gallons, for 1 year (in tank cars), $.1343. Beacon Oil Co., 1,000 gallons, for 1 year, (in tank wagons), $.1425. Cities Service Co., 375 gallons, in drums net (3 months), (drums net), $.1774.

Newport, R. I.—Beacon Oil Co., 212,000 gallons, in tank wagons (1 year), $.1537.

Melville, R. I.—Atlantic Refining Co., 45,000 gallons in tank cars, (6 months), $.1376.

New London, Conn.—Beacon Oil Co., 100,000 gallons, in tank cars, (1 year), $.1554. Tidewater Oil Sales Corp., 10,000 gallons (1 year), $.189.

South Brooklyn, N. Y.—Atlantic Refining Co., 85,000 gallons in tank cars, (6 months) $.1369. Tidewater Oil Sales Corp., 30,000 gallons (1 year), $.1476. (By barge into Navy tanks or vessels alongside Government dock or within harbor limits, lots not less than 10,000 gallons.)

South Brooklyn—Tidewater Oil Sales Corp., 20,000 gallons (1 year), $.189. Standard Oil of New York, 5,000 gallons, (6 months), $.189. (By vessels delivered lots 1,000 to 2,000 gallons in drums net, within harbor limits.) Standard Oil of New York, 10,000 gallons, $.189. (By vessels delivered lots 2,000 to 10,000 gallons in drums net within harbor limits.)

Brooklyn, N. Y.—Tidewater Oil Sales Corp., 125,000 gallons, (1 year), $.1502.

New York, N. Y., Naval Hospital.—Tidewater Sales Corp., 4,500 gallons (1 year) $.189.

Baldwin, L. I., N. Y.—Tidewater Oil Sales Corp., 6,100 gallons (1 year) in tank wagons $.139.

Lakehurst, N. J.—Atlantic Refiining Co., 50,000 gallons, in tank cars $.1386.

Dover, (Lake Denmark), N. J.—Standard Oil of New Jersey, 900 gallons in tank wagons (3 months) $.18.

Philadelphia, Pa.—American Oil Co., 1,250 gallons, in tank wagons (3 months) $.1695. Atlantic Refining Co., 147,500

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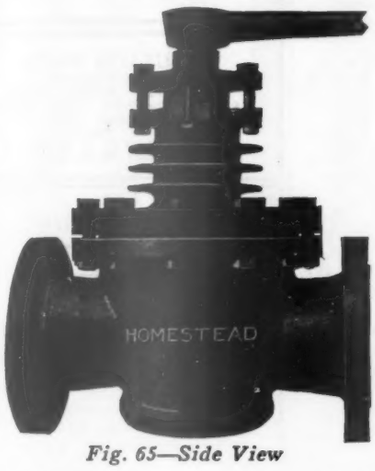

Fig. 65—Side View

Note the Following:

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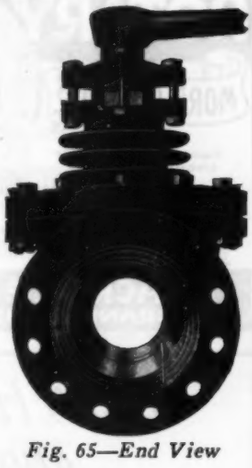

Fig. 65—End View

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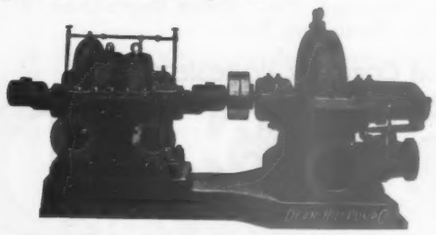

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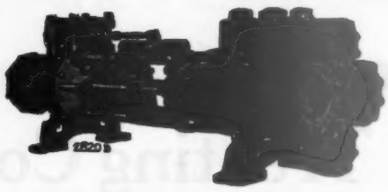

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Bethany Beach, Del.—American Oil Co., 300 gallons (3 months) $.1595.

Cape Henlopen, Del.—American Oil Co., 300 gallons, in tank wagon (3 months) $.1595.

Annapolis, Md.—Atlantic Refining Co., 37,500 gallons, in tank cars (6 months) $.1424. American Oil Co., 3,750 gallons in tank wagons (3 months $.1595.

Washington, D. C.—Atlantic Refining Co., 40,000 gallons (6 months) (in tank cars of suppliers f.o.b.) $.125. Atlantic Refining Co., 40,000 gallons for delivery in tank cars at suppliers' works, $.125; for delivery at Navy Yard, $.1339. Penn Oil Co., 12,500 gallons (6 months) $.1475; tax 2 cents.

Anacostia, (Washington) D. C.—Penn Oil Co., 9,500 gallons (6 months) $.1475; tax 2 cents.

Bellevue, Anacostia, D. C.—Penn Oil Co., 1,500 gallons, in tank wagons (3 months) $.1475; tax 2 cents.

Dahlgren, Va.—Atlantic Refining Co., 37,000 gallons in tank cars (6 months) $.1428. Standard Oil of New Jersey, 500 gallons, in drums net (3 months) $.18.

Indian Head, Md.—Atlantic Refining Co., 12,500 gallons in tank cars (6 months) $.1428. Standard Oil of New Jersey, 250 gallons, in tank wagons (3 months) $.18.

Hampton Roads, Va.—Standard Oil of New Jersey, 12,500 gallons (3 months) in bulk to vessels at contractors' dock, $.135. Atlantic Refining Co., 300,000 gallons, in tank cars (6 months) $.1275. Standard Oil of New Jersey, 12,500 gallons, (3 months) by barge to vessels alongside Government dock or within harbor limits in bulk, not less than 10,000 gallons $.155. Standard Oil of New Jersey, 25,000 gallons (3 months) by contractors' barge into Naval storage tanks, $.155. American Oil Co., 2,000 gallons, in tank wagons to Naval Hospital, Norfolk, Va., (3 months) $.1595.

Norfolk, Va.—Atlantic Refining Co., 80,000 gallons, in tank cars (6 months) $.1275.

Yorktown, Va.—Atlantic Refining Co., 13,500 gallons in tank cars (6 months) $.135.

Quantico, Va.—Atlantic Refining Co., 12,500 gallons in tank cars (6 months) $.1474.

Charleston, S. C.—Standard Oil of New Jersey, 5,000 gallons, in tank cars, (3 months) $.135; 2,500 gallons, in tank cars (3 months) $.1365; 1,500 gallons in tank wagons, (3 months) $.18; 500 gallons in drums net, (3 months) $.18.

Key West, Fla.—Standard Oil of Kentucky, 28,000 gallons, in tank wagons (3 months) $.19.

Pensacola, Fla.—Standard Oil of Kentucky, 75,000 gallons in tank cars (6 months) $.1575.

Great Lakes, Ill.—Atlantic Refining Co., 50,000 gallons, in tank cars, (6 months) $.1511.

South Charleston, West Va.—Standard Oil Co. of New Jersey, 875 gallons in tank wagons (3 months) $.18.

Aviation Gasoline

Elk Refining Co., 20,000 gallons in tank cars (1 year) $.1951.

Philadelphia, Pa.—Atlantic Refining Co., 45,000 gallons in tank cars (6 months) $.1783.

Lakehurst, N. J.—Atlantic Refining Co., 25,000 gallons in tank cars (6 months) $.188.

New York, N. Y.—Standard Oil Co. of New York, 20,000 in drums net (6 months) $.255.

Norfolk and Hampton Roads, Va.—Atlantic Refining Co., 250,000 gallons in tank cars (6 months) $.195.

Dahlgren, Va.—Atlantic Refining Co., 25,000 gallons in tank cars (6 months) $.1928.

Annapolis, Md.—Atlantic Refining Co., 15,000 gallons in drums, net, (6 months) $.295.

Reid, Va.—Elk Refining Co., 150,000 gallons in tank cars (1 year) $.1918.

Pensacola, Fla.—Standard Oil of Kentucky, 177,500 gallons, in tank cars, (3 months) $.1675.

Washington, D. C.—Atlantic Refining Co., 49,500 gallons, in tank cars, (6 months) $.1899.

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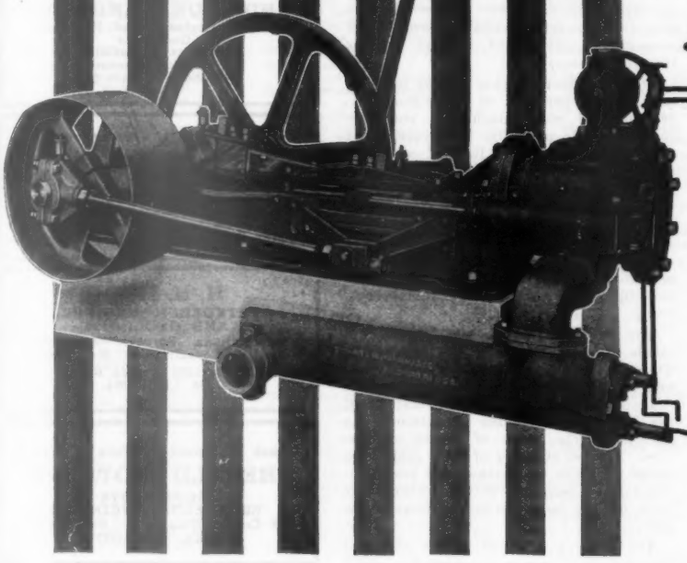

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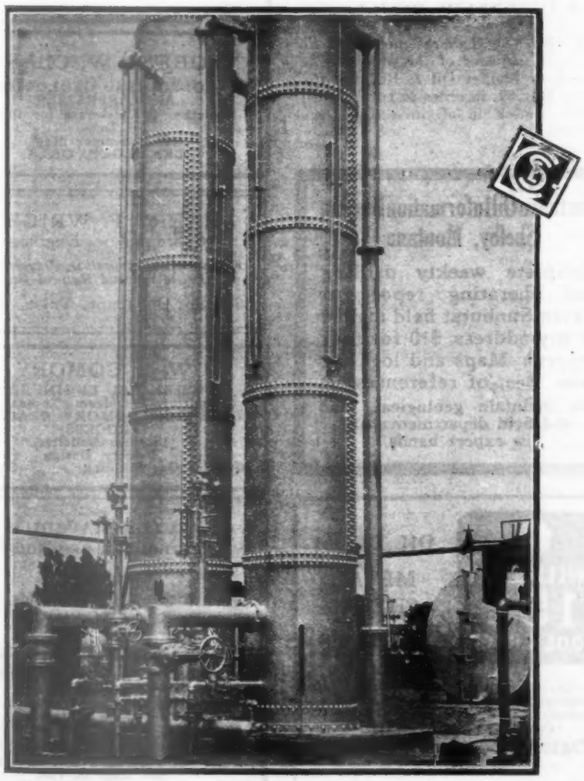

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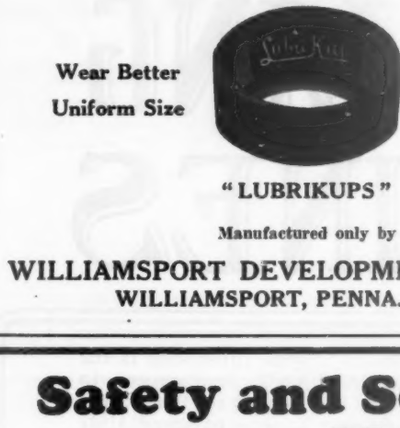

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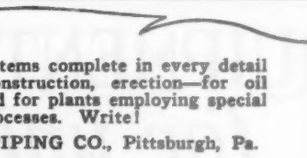

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The Oil and Gas Journal
TULSA, OKLA.

ASPHALTIC BASE LUBS QUESTIONED IN TEXAS

HOUSTON, Tex., May 15.—The Texas Highway Commission has invited bids on gasoline and lubricating oils for one year. The specifications on lubs specify they must be of paraffin base.

Coastal refiners have protested because the specifications shut them out. Coastal crude is of asphaltic base. They threaten to appeal to the courts. The major companies make lub stocks from crude of a paraffin base, but the quotations on lubs of asphaltic base are higher than those on stocks of a paraffin base.

E. Estes, equipment engineer of the department, is quoted as saying lubs of a paraffin base are more serviceable and that the lubs from asphaltic base do not sustain the claims of refiners making them.

Coastal refiners answer this by pointing out that 98 per cent of the automobile, tractor and road machinery manufacturers include asphaltic base lubricating oils in their approved lists of oils suitable for use in the cars and machinery made by them.

They assert the lists of approved oils issued by the various manufacturers and sent out to guide the users of motor vehicles in the selection of oils are approved only after severe tests, made under the supervision of mechanical engineers.

The refiners further state that two-thirds of the automobiles and tractors in Texas operate on lubs of asphaltic base and have been doing so for several years.

It is the first time in the history of the State that a public department has questioned the value of asphaltic base lubs. The adaptability of these lubricants under all kinds of weather and road conditions has been one of the factors that built up the industry in the Coastal region.

The amount involved in the proposed contract is a minor consideration with the refiners. They fear the effect the rejection of asphaltic base lubricants by the State of Texas will have on the markets throughout the county. Texas is the only state producing lubs made from crude of asphaltic base.

J. C. KENNEDY RESIGNS

J. C. Kennedy has resigned from his position as manager of the pipe line department of Shaffer Oil & Refining Co., effective May 31, in order to go into business for himself in oil investments and engineering.

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Band Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C. & Co., Inc.
Parkersburg Rig & Reel Co.

Barrels—
Petroleum Iron Works Co.

Batteries—
National Carbon Co.

Bearings—Roller—
American Roller Bearing Co.
Timken Roller Bearing Co.

Bearings—Thrust—
Timken Roller Bearing Co.

Belting—
Bridgeport Machine Co.
Continental Supply Co.
Fenwick-Reddaway Mfg. Co.
Frick-Reid Supply Co.
Imperial Belting Co.
International Supply Co.
Lufkin Foundry & Machine Co.
Murray Rubber Co.
Stanley Belting Corp.
Victor Balata & Textile Belting Co.

Belting—Rubber—
Bovaird Supply Co.
Goodyear Tire & Rubber Co.
United States Rubber Co.

Belt Lacing—
Flexible Steel Lacing Co.

Bits—Disc—
U. S. Tool Co.

Bits—Fish Tail—
Federal Supply Co.
Lucey Mfg. Corp.

Bits—Rotary Disc—
Hughes Tool Co.

Bits Rotary Rock—
Hughes Tool Co.
Reed Roller Bit Co.

Bit Steel (See Steel—Bit)—

Bleaching Powder—
Mathieson Alkali Works, Inc.

Blow-off Valves (See Valves)—

Blowout Preventer—
Regan Forge & Engineering Co.
Stearns-Roger Mfg. Co.

Blowpipes—
Oxweld Acetylene Co.

Boiler Feed Pumps (See Pumps)

Boilers—Horizontal Return Tubular—
Brownell Co., The
Kewanee Boiler Co.
Vogt, Henry, Machine Co.

Boilers—Oil County—
Bovaird & Seyfang Mfg. Co.
Bridgeport Machine Co.
Brownell Co., The
Coatesville Boiler Works.
Continental Supply Co.
Donovan Boiler Works.
Frick-Reid Supply Co.
International Supply Co.
Kewanee Boiler Co.
Lucey Mfg. Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Republic Supply Co.
Titusville Iron Works.

Bolted Tanks (See Tanks)—

Bolts and Nuts—
Sheffield Steel Corp.

Bolt Threading Machines—
Landis Machine Co.

Bottles—Glass—
Illinois Glass Co.

Box and Pin Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Braces—Tool—
Dunn Mfg. Co.

Break Out Tongs (See Tongs)—

Briquetting Machines—
Simplex Equipment Co.

Bronze Valves (See Valves—Brass and Bronze)—

Buildings—Metals, Sectional (All Types)—
Austin Co.
Braden Co.
Butler Mfg. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Swartwout Co.
Truscon Steel Co.

Bulk Station Tanks (See Tanks)

Bull Ropes—
Ajax Rope Co., Inc.
Columbian Rope Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Bull Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C. & Co., Inc.
Parkersburg Rig & Reel Co.

Burners—Gas—
Eureka Burner Co.
Okmulgee Boiler & Welding Works.

Burners—Oil—
Baker Motors, Inc.
Continental Supply Co.
Reid, Joseph, Gas Engine Co.

Bushings—Rotary Drive—
Wilson Oil Tools Corp.

C

Cable Bit Steel—
Andrews Steel Co.
Federal Supply Co.
Heppenstall Forge & Knife Co.

Cables—Drilling, Manila—
Ajax Rope Co., Inc.
Columbian Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Cables—Steel—
Ajax Rope Co., Inc.
American Cable Co.
Black Steel & Wire Co.
Broderick & Bascom Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Hazard Mfg. Co.
Leschen, A. & Sons Rope Co.
Murray Tool & Supply Co.
National Supply Co.
Republic Supply Co.
Wickwire-Spencer Steel Corp.
Williamsport Wire Rope Co.

Calf Rope—
Ajax Rope Co., Inc.

Calf Wheels—Steel—
International Derrick & Equipment Co.
Moore, Lee C. & Co., Inc.

Cannon—Oil Field—
Braden Co.

Cans—Water—
Gott, H. P., Mfg. Co.

Capping Steel—
Andrews Steel Co.

Carbon—Black Diamond—
Diamond Drill Carbon Co.
Patrick, R. S.

Cars—Tanks—
American Car & Foundry Co.
General American Tank Car Corp.
Shippers' Car Line, Inc.

Cars—Tank, Leased—
American Car & Foundry Co
North American Car Co.
Shippers' Car Line, Inc.

Casing—
Bovaird Supply Co.
Continental Supply Co.
Emsco Derrick & Equip. Co.
Jarecki Mfg. Co.
National Supply Co.
National Tube Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Wheeling Steel Corp.

Casing—Wrought Iron—
Byers, A. M. Co.
Reading Iron Co.

Casing Elevators (See Elevators, Casing and Tubing)—

Casinghead Gasoline Equipment—(See Natural Gasoline Plant Equipment)—

Casing Heads—
Arbon, Paul, & Co.
Dresser, S. R., Mfg. Co.
Kansas City Hay Press Co.
Oil Well Improvements Co.

Casing Lines—
Ajax Rope Co., Inc.

Casing Packers (See Packers)—

Casing Pulleys (See Pulleys)—

Casing Shoes—
Baker Casing Shoe Co.
Bartlesville Supply Co.
Bridgeport Machine Co.
Guiberson Corp.
Oil Well Supply Co.

Casings Tongs (See Tongs)—

Castings—Alloy Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Castings—Brass—
Progressive Brass Mfg. Co.

Castings—Chrome Nickel Steel—
Sivyer Steel Casting Co.

Castings—Corrosion Resisting Non Ferrous—
Hills-McCanna Co.

Castings—Electric Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Castings—Grey Iron—
Ajax Iron Works.
American Car & Foundry Co.
Gaso Pump & Burner Mfg. Co.
Pittsburgh Boiler & Machine Co.

Castings—Steel—
Ajax Iron Works.
Chicago Steel Foundry Co.
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Cement—Fire and High Temperature—
Botfield Refractories Co.

Centrifugal Pumps (See Pumps)

Chain Pipe Tongs (See Tongs)—

Chains—Conveying—
Chain Belt Co.
Link-Belt Co.

Chains—Oil Well—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.
Lufkin Fdy. & Machine Co.

Chains—Power Transmission—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.

Check Valves (See Valves)—

Chemical Treatment Crude Oil Emulsion—
Barnickel, Wm. S., & Co.

Chlorine—Liquid—
Mathieson Alkali Works, Inc.

Chrome Nickel Steel Castings (See Castings)—

Circulating Heads—
Wilson Oil Tools Corp.

Clamps—Anchor—
Bartlesville Supply Co.

Clamps—Belt—
Federal Supply Co.
Victor Balata & Textile Belting Co.

Clamps—Collar Leak—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg .Co.

Clamps—Drilling—
Western Supply Co.

Clamps—Hoisting—
Newton Process Mfg. Co.

Clamps—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Clamps—River—
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.

Cloths—Wiping—
Nye Tool & Machine Works.

Clutches—Friction, Plate Type—
Twin Disc Clutch Co.

Cocks—Brass and Iron—
Lunkenheimer Co.
Walworth Mfg. Co.

Cocks—Plug—
Homestead Valve Mfg. Co.

Cocks—Water Gauge—
Smith Separator Co.

Coils and Bends—Pipe—
Harrisburg Pipe & Pipe Bending Co.
Midwest Piping & Supply Co.

Collar Leak Clamps—(See Clamps)

Compounds—Boiler—
Dearborn Chemical Co.

Compounds—Joint Sealing—
Key Boiler Equipment Co.

Compressor Cylinders (See Cylinders—Compressor)—

Compressors—Air—
Bessemer Gas Engine Co.
Clark Brothers Co.
Cooper, C. & G. Co.
Gardner Governor Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Compressors—Ammonia—
Carbondale Machine Co.
Cooper, C. & G. Co.

Compressors—Direct Connected Motor and Gas Engine Driven
Buffalo Gasolene Motor Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Miller Improved Gas Engine Co.

Compressors—Direct Driven Air and Gas—
Bessemer Gas Engine Co.
Miller Improved Gas Engine Co.

Compressors—Gas—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
National Transit Pump & Machine Co.
Worthington Pump & Machinery Corp.

Condenser Boxes—
Kaw Steel Construction Co.
Petroleum Iron Works Co.

Condensers—
American Radiator Co.
Chicago Pneumatic Tool Co.
National Gas Products Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Consulting and Contracting Engineers (See Engineers)—

Controllers—Liquid Level—
Fisher Governor Co., Inc.
Newton Process Mfg. Co.
Smith Separator Co.

Controllers—Pressure—
Smith Separator Co.

Controllers—Temperature—
Brown Instrument Co.
Foxboro Co., Inc.
Taylor Instrument Co.

Conveying & Elevator Machinery—
Brady Conveyors Corp.

Conveyors—Bucket and Belt—
Brady Conveyors Corp.

Conveyors—Pneumatic—
Brady Conveyors Corp.

Conveyors—Portable Belt—
Barber-Greene Co.

Cooling Towers—Atmospheric—
Braun, C. F., & Co.
National Gas Products Co.

Cordage—
Bridgeport Machine Co.
International Supply Co.
Plymouth Cordage Co.

Core Drilling—
Longyear, E. J., Co.
Mineral Exploration Co.

Core Drills—Diamond—
Longyear, E. J., Co.
Sullivan Machinery Co.

Coring Tools—
Reed Roller Bit Co.
Wilson Oil Tools Corp.

Couplings—Flexible—
Nuttall, R. D., & Co.
Victaulic Co. of America.

Couplings—Plain End Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Couplings—Seamless Steel—
Harrisburg Pipe & Pipe Bending Co.
Superior Tube Co.

Couplings—Steel for Casing, Line Pipe, Drill Pipe and Tubing—
Dayton Pipe Coupling Co.
Smith, A. O., Corp.

Cracking Processes—
Graver Corp.
Kellogg, M. W., Co.
Universal Oil Products Co.

Crawler Treads—
Full Crawler Co.

Crown Blocks—
International Derrick & Equipment Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.

Cups—Composition—
Williamsport Development Co.

Cups—Leather—
Auer, C. A.

Cutters—Pipe—
Borden Co.
Nye Tool & Machine Works.
Trimont Mfg. Co.

Cylinders—Compressor—
Hope Engineering & Supply Co.

Cylinder Stocks—
Barnsdall Refining Co.
Pure Oil Co.
Texas Company, The

D

Dehydrating Process—
Barnickel, Wm. S., & Co.

Dephlegmators—
National Gas Products Co.
Newton Process Mfg. Co.
Smith, A. O. Corp.

Depletion Reports—
American Appraisal Co.

Derricks—Steel—
Emsco Derrick & Equip. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
O'Brien Steel Construction Co.
Parkersburg Rig & Reel Co.
Superior Tube Co.

Derricks—Turnbuckle—
National Turnbuckle Derrick Co.

Diamond Core Drills (See Core Drills—Diamond)—

Diamonds for Core Drilling (See Carbon—Black Diamond)—

Die Heads—Automatic Screw Cutting—
Landis Machine Co.

Die Heads—Bolt Threading—
Bignall & Keeler Machine Works.
Ladis Machine Co.

Die Heads—Stationary Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.

Diesel Engines (See Engines)—

Dies—Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Nye Tool & Machine Works.

Differential Pressure Recorders (See Recorders)—

Direct Driven Pumps (See Pumps)

Disc Bits (See Bits—Disc)—

Dissolved Acetylene (See Acetylene)—

Ditchers—Pipe Line—
Barber-Greene Co.
Buckeye Traction Ditcher Co.

Draw Works—
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Titusville Iron Works Co.

Drillers Hose (See Hose)—

Drilling and Fishing Tools—
Acme Fishing Tool Co.
Baash-Ross Tool Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Brown Tool Co., Inc.
Burns Tool Co.
Continental Supply Co.
Cushing, Tim, Tool & Supply Co.
Emsco Derrick & Equip. Co.
General Oil Tools Co.
Hinderliter Tool Co.
Hughes Tool Co.
International Supply Co.
Larkin & Co.
Leidecker Tool Co.
Lucey Mfg. Corp.
Murray Tool & Supply Co.
Oil Well Supply Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Spang & Co.
Star Drilling Machine Co.
U. S. Tool Co.

Drilling Engines (See Engines)—

Drilling Equipment—
Clark Brothers Co.
Hughes Tool Co.
O'Brien Steel Construction Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Star Drilling Machine Co.

Drilling Gate Valves (See Valves)

Drilling Machines—
Leidecker Tool Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Drilling Tools (See Drilling and Fishing Tools)—

Drilling Valves (See Valves)—

Drills—Portable Air—
Chicago Pneumatic Tool Co.

Drive Shoes—
Bartlesville Supply Co.
Larkin & Co.

Drop-Forged Wrenches (See Wrenches)—

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Electrical Equipment—
Fairbanks-Morse & Co.
Pyle National Co.
Wico Electric Co.

Electrical Apparatus (See Apparatus—Electric)—

Electric Drilling Equipment—
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Steel Castings—See Castings—Electric Steel)—

Elevators—Casing and Tubing—
Bovaird Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Wilson Oil Tools Corp.

Elevators—Rod—
B. & A. Specialty Co.
D & B Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The
Detroit Graphite Co.
Sherwin-Williams Co.

Engineers—Consulting and Contracting—
Brooks Engineering Corp.
Hope Engineering & Supply Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Brooks Engineering Corp.
Foamite-Childs Corp.
Engineers—Oil Buildings—
Austin Co.
International Derrick & Equipment Co.
Engineers—Oil Treating—
Barnickel, Wm. S., & Co.
National Gas Products Co.
Engines—Crude Oil—
Continental Supply Co.
Western Machinery Co.
Engines—Diesel—
Bessemer Gas Engine Co.
Busch-Sulzer Bros. Diesel Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Western Machinery Co.
Worthington Pump & Machinery Corp.
Engines—Drilling—
Ajax Iron Works.
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Brownell Co., The
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Lufkin Foundry & Machine Co.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.
Engines—Gas—
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bruce-MacBeth Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Bros. Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G., Co.
Emsco Derrick & Equipment Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch. Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Gasoline—
Beaver Manufacturing Co.
Buda Co.
Buffalo Gasolene Motor Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
Hercules Motor Corp.
International Harvester Co. of America.
Novo Engine Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-Morse & Co.
Franklin Valveless Engine Co.
International Harvester Co. of America.
Ingersoll-Rand Co.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.
Western Machinery Co.
Engines—Rotary—Steam—
Baker Motors, Inc.
Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.
Engines—Steam—
Ajax Iron Works.
Baker Motors, Inc.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Extinguishers—Fire—
Foamite-Childs Corp.

F

Fabricators for Gasoline Plants and Refineries—
National Gas Products Co.
Stearns-Rogers Mfg. Co.
Filters—Oil—
Burt Mfg. Co.
Fishing Tools (See Drilling and Fishing Tools)—
Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.
Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Kelly & Jones Co.
Walworth Mfg. Co.
Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Lufkin Foundry & Machine Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Victaulic Co. of America.
Fittings—Steel—
Dayton Pipe Coupling Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Kelly & Jones Co.
Metric Metal Works.
Flange Unions—
Gaso Pump & Burner Mfg. Co.
Flashlights—
National Carbon Co.
Floating Roofs and Decks—
Chicago Bridge & Iron Works.
Floodlights—
Pyle-National Co.
Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Heppenstall Forge & Knife Co.
Forgings—
Champion Machine & Forging Co.
Milwaukee Forge & Machine Co.
Friction Clutch Pulleys (See Pulleys)—
Fuel Oil (See Oil—Fuel)—
Fuller's Earth—
Sinclair Refining Co.

G

Gas Compressors (See Compressors—Gas)—
Gas Engines (See Engines—Gas)
Gas Holders—
Chicago Bridge & Iron Works.
Gaskets—
Garlock Packing Co.
McCord Radiator & Mfg. Co.
Gaskets—Fibre—
Durabla Mfg. Co.
Gas Masks & Safety Appliances—
Mine Safety Appliance Co.
Gas Meters (See Meters)—
Gas Oil (See Oil—Gas)—
Gasoline—
Berry's, James B., Sons Co.
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Gasoline—Natural—
Chestnut & Smith Corp.
National Gas Products Co.
Skelly Oil Co.
Warren Petroleum Co.
Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.
Gas Regulator Casinghead—
Davis, G. M., Regulator Co.
National Gas Products Co.
Gas Scrubbers—
National Gas Products Co.
Newton Process Mfg. Co.
Gauge Glass—High Pressure—
Durabla Mfg. Co.
Gauge Poles—
Marsh Gauge Pole Co.
Gauges—Automatic Tank—
Brooks Engineering Co.
Gauges—Pressure and Vacuum—
Bristol Co.
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gear Driven Pumps (See Pumps)
Gears—Cut—
Nuttall, R. D., & Co.
Gears—Reduction—
Emsco Derrick & Equipment Co.
Nuttall, R. D., & Co.
Gears—Reverse—
Emsco Derrick & Equipment Co.
Generators—
Westinghouse Electric & Mfg. Co.
Generators—Acetylene—
Oxweld Acetylene Co.
Generators—Steam—
Baker Motors, Inc.
Generators—Turbine —
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.
Glassware—Chemical for Laboratory Use—
Illinois Glass Co.
Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.
Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.
Grey Iron Castings (See Castings)

H

Hammers—Chipping and Calking Pneumatic—
Chicago Pneumatic Tool Co.
Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.
Hangers—Iron and Steel—
Continental Supply Co.
Dodge Mfg. Corp.
Hangers—Tubing—
Hercules Tool Co.
Hatches—Gauges and Thief—
Oil Conservation Engineering Co.
Heat Exchangers —
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
Heat Exchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.
High Pressure Gate Valves (See Valves)—
Hoists—Pneumatic, Geared and Universal—
Chisholm-Moore Mfg. Co.
Yale & Towne Mfg. Co.
Hoists—Portable—
Chisholm-Moore Mfg. Co.
Ford Chain Block Co.
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.
Hooks for Rods and Tubing—
B. & A. Specialty Co.
Dunn Mfg. Co.
Hose—
Fenwick-Reddaway Mfg. Co.
Hose—Driller—
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Oil Suction and Discharge
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.
Hot Rolled Strip Steel (See Steel)
Hydraulic Jacks (See Jacks)—
Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Insulation Materials —
Celite Products Co.
Johns-Manville, Inc.
Insurance—Fire—
Oil Insurance Association
Insurance—Tornado—
Oil Insurance Association
Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic—
Bridgeport Machine Co.
Jacks—Lifting—
Templeton, Kenly & Co., Ltd.
Jacks—Pumping—
American Mfg. Co. of Texas.
American Wells Works.
Bessemer Gas Engine Co.
Braden Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press. Co.
Norris, W. C.
Spang & Co.
Jars—
Arbon, Paul, & Co.
Bridgeport Machine Co.
Spang & Co.
Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.

L

Lacquers—
Arco Company, The
Sherwin-Williams Co.
Lanterns—Electric—
Delta Electric Co.
Lead and Mixed Metal Products—
Eagle-Picher Lead Co.
Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.
Lead Wool and Containers—
Eagle-Picher Lead Co.
Lifting Jacks—(See Jacks)—
Lighting Equipment—
Pyle National Co.
Westinghouse Electric & Mfg. Co.
Liquid Level Controls (See controllers)—
Litharge—
Eagle-Picher Lead Co.
National Lead Co.
Loaders—Trucks—
Barber-Greene Co.
Long Distance Telephone—
American Telephone & Telegraph Co.
Lubricating Devices—
McCord Radiator & Mfg. Co.
Lubricating Oils (See Oils)—
Lubricators—
Ajax Iron Works.
Lunkenheimer Co.
Lubricators—Force Feed—
Manzel Brothers Co.
McCord Radiator & Mfg. Co.

M

Machine Tools—
Ryerson, Jos. T., & Sons, Inc.
Manholes—Tank—
Brooks Engineering Corp.
Manifolds—
Reid, Joseph, Gas Engine Co.
Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.
Meters—Gasoline—
Pittsburgh Meter Co.
Meters—Oil—
Pittsburgh Meter Co.
Molded Goods—Rubber—
Goodyear Tire & Rubber Co.
Motors—Electric—
Fairbanks-Morse & Co.
Westinghouse Electric & Mfg. Co.
Motors—Gasoline (See Engines—Gasoline)—
Motor Trucks (See Trucks—Motor)—

N

Naphtha—
Pure Oil Co.
Natural Gasoline (See Gasoline—Natural)—
Natural Gasoline Plant Equipment
American Tank Co.
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
National Gas Products Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis.
Nitrogen—
Linde Air Products Co.
Nozzles—Spray—
Power Plant Equip Co.

O

Oil and Gas Pipe Line Construction—
Hope Engineering & Supply Co.
Oil Burners (See Burners—Oil)—
Oil Engines, Semi-Diesel (See Engines—Semi-Diesel Oil)—
Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Gaso Pump & Burner Mfg. Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kaw Steel Construction Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Machine Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Simplex Equipment Co.
Trumble Gas Trap Co.
Oil—Fuel—
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Gas—
Crown Central Petroleum Corp.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Lubricating—
Barnsdall Refining Co.
Berry's James B., Sons Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Humble Oil & Refining Co.
Magnolia Petroleum Co.
Pennzoil Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Texas Company, The
Oil—Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pennzoil Co.
Pure Oil Co.
Skelly Oil Co.
Oiling Devices—
Lunkenheimer Co.
Oil Meters (See Meters)—
Oil Piping Equipment (See Fittings)—
Oil Reclaiming Process—
Barnickel, Wm. S., & Co.
Houston Pump & Supply Co.
Oil Refinery Equipment (See Refinery Equipment)—
Oil Securities (See Securities)—
Oil Suction and Discharge Hose—(See Hose)—
Oil Well Cementing—
Halliburton Oil Well Cementing Co.
Oil Well Screens (See Screens)—
Oil Well Tools—
D & B Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.
Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.
Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Meier, E. C., Lubricating Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.
Packing—
Crane Packing Co.
Durabla Mfg. Co.
Garlock Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville, Inc.
Packing—Metallic—
Crane Packing Co.
Paint Guns—
Binks Spray Equipment Co.
Painting Equipment—Mechanical
Matthews, W. N. Corp.
Paints—
Aluminum Co. of America
American Asphalt Paint Co.
Arco Company, The
Cook Paint & Varnish Co.
Detroit Graphite Co.
Dixon, Joseph Crucible Co.
Du Pont de Nemours, E. I., & Co., Inc.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Hill Hubbell & Co.
National Lead Co.
Sherwin-Williams Co.
St. Louis Surfacer & Paint Co.
Pipe—Cast Iron—
Greenspon's Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.
Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
Pipe—Steel—
Continental Supply Co.
Greenspon's Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Wheeling Steel Corp.
Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
South Chester Tube Co.
Superior Tube Co.
Pipe and Nipple Threading Machines—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.
Pipe Clamps (See Clamps—Pipe)
Pipe Grips—
Larkin & Co.
Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.
Pipe Line Coatings—
Hill Hubbell & Co.
Pipe Line Construction Tools—
National Transit Pump & Machine Co.
Pipe Line Ditchers (See Ditchers)
Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.
Pipe Screwing Machines—
Buckeye Traction Ditcher Co.
Pipe Straightening Machines—
W-K-M Co., Inc.
Pipe Suspension Device—
Stearns-Rogers Co.
Pipe Threaders—Power—
Williams Tool Corp.
Pipe Tools —
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Piping—Fabricated—
Kelly & Jones Co.
Midwest Piping & Supply Co.
Piping—Hard Rubber—
United States Rubber Co.
Piping—Steel & Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.
Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.
Pistons—Expansion—
Wilson Oil Tool Corp.
Pistons—Slush Pump—
Guiberson Corp.
Plugs—Bottom Water—
Guiberson Corp.
Portable Drilling Rigs (See Rigs)
Power Units—Portable (See Engines)—
Pre-Heaters—
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Preservatives—Asphalt—
American Asphalt Paint Co.
Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.
Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Safety Pulling Machine Co.
Pumpers—Long Stroke—
Farley Machine Co.
Pumping and Pulling Motors—Electric—
Westinghouse Electric & Mfg. Co.
Pumping Equipment—
American Well Works.
Axelson Machine Co.
Bryson Jackson Pump Mfg. Co., Inc.
D & B Pump & Supply Co.
Farley Machine Co.
Goulds Pumps, Inc.
Jones, S. M., Co.
Myers, F. E., Bros. & Co.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.
Pumping Gear Units—
Nuttall, R. D., & Co.
Pumping Jacks (See Jacks)—
Pumping Powers—
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.
Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Governor Co.
Oil Well Supply Co.
Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Fairbanks-Morse & Co.
Worthington Pump & Machinery Corp.
Pumps—Direct Driven—
Bessemer Gas Engine Co.
Pumps—Electric—
Prescott Co.
Pumps—Fuel Oil Service—
Blackmer Pump Co.
Northern Fire Apparatus Co.
Pumps—Fuel Oil Transfer—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.
Pumps—Gear Driven—
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.

Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Pipe Line—
Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
National Transit Pump & Machine Co.
Prescott Co.
Worthington Pump & Machinery Corp.
Pumps—Power—
Dean Brothers Co.
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Novo Engine Co.
Prescott Co.
Waukesha Motor Co.
Pumps—Refinery—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.
Pumps—Rotary—
Blackmer Pump Co.
Northern Fire Apparatus Co.
Roots, P. H. & F. M., Co.
Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.
Pumps—Slush—
Gardner Governor Co.
Pumps—Steam—
Dean Brothers Co.
Fairbanks-Morse Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.
Pumps—Suction—
Gaso Pump & Burner Mfg. Co.
Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Pumps—Water—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Northern Fire Apparatus Co.
Prescott Co.
Punch—Rotary Belt—
Victor Balata & Textile Belting Co.
Purifiers—Oil Absorption—
Sharpless Specialty Co.
Pyrometers—
Brown Instrument Co.
Republic Flow Meters Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.
Ratchet Pipe Threaders—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.
Ratchet Reamers—
Nye Tool & Machine Works.
Ratchet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.
Receiving Boxes—
Reid, Joseph, Gas Engine Co.
Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.
Refinery Equipment—
American Radiator Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works.
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross-Mehan Foundries.
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.
Refractories—Furnace, Stills and Baffles—
Botfield Refractories Co.
National Gas Products Co.
Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.
Regulators—
Fisher Governor Co., Inc.
Gilfillan Machine Works.
Smith Separator Co.
Regulators—Gas—
Chaplin-Fulton Mfg. Co.
Davis, G. M., Regulator Co.
Equitable Meter & Mfg. Co.
Fisher Governor Co.
Metric Metal Works.
National Gas Products Co.
Smith Separator Co.
Rental Service—
Bridgeport Machine Co.
Reversible Clutches—
Bessemer Gas Engine Co.
Rig Irons—
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.
Rod Guides—
Meier, E. C., Lubricating Co.
Rods—Polish—
Jones, S. M., Co.
Rods—Pull—
Axelson Machine Co.
Columbus Sucker Rod Co.
Jones, S. M., Co.
Sheffield Steel Corp.
Rods—Sucker—
Axelson Machine Co.
Columbus Sucker Rod Co.
D & B Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.
Rods—Valve—
Jones, S. M., Co.
Roofing—Asbestos—
Johns-Manaville, Inc.
Rope Socket Metal—
Eagle-Picher Lead Co.
Rope—Manila—
Ajax Rope Co., Inc.
Boviard Supply Co.
Republic Supply Co.
Rope—Wire—
Ajax Rope Co., Inc.
American Cable Co.
Boviard Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Leschen, A. & Sons, Rope Co.
Wickwire-Spencer Steel Corp.
Williamsport Wire Rope Co.
Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.
Rotary Drilling Equipment—
Emsco Derrick & Equipment Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.
Rotary Lines (See Rope—Wire)—
Rotary Post—
Reed Roller Bit Co.
Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.
Rubber Hose (See Hose)—
Run Down Tanks (See Tanks)—
Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila—
Ajax Rope Co., Inc.
Plymouth Cordage Co.
Sand Lines—Wire—
Ajax Rope Co., Inc.
Broderick & Bascom Rope Co.
Wickwire-Spencer Steel Corp.
Screens—Oil Well—
Layne & Bowler Co.
Screens—Water Well—
Layne & Bowler Co.
Screws Temper—
Burns Tool Co.
Seamless Steel Couplings (See Couplings Seamless Steel)—
Separators—Centrifugal—
Miller, Max B., & Co.
Sharpless Sepcialty Co.
Volz Engineering Equipment Co.
Separators—Gas and Oil—
American Tank Co.
Smith Separator Co.
Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.
Sheets—Corrugated, Black and Galvanized—
American Sheet & Tin Plate Co.
Ryerson, Jos. T., & Son, Inc.
United Alloy Steel Corp.
Sheets—Steel—
American Sheet & Tin Plate Co.
Republic Iron & Steel Co.
Sheffield Steel Corp.
United Alloy Steel Corp.
Shingles—Asbestos—
Johns-Manaville, Inc.
Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Slush Pump Pistons (See Pistons)—
Slush Pumps (See Pumps)—
Smoke Stacks—
Donovan Boiler Works.
Snuffers—Fire—
Simplex Equipment Co.
Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.
Sockets—Sucker Rod—
Guiberson Corp.
Sockets—Swivel—
Arbon, Paul, & Co.
Sockets—Wire Rope—
Chicago Steel Foundry Co.
Soda Ash—
Mathieson Alkali Works, Inc.
Soda—Caustic—
Mathieson Alkali Works, Inc.
Solders—Bar and Wire
Eagle-Picher Lead Co.
Hoyt Metal Co.
Spark Plugs—
Mosler Metal Products Corp.
Spears—
Acme Fishing Tool Co.
Brown Tool Co., Inc.
Special Steel (See Steel Special)—
Split Sleeves (See Sleeves)—
Sprockets—Power Transmission—
Ajax Iron Works.
Chain Belt Co.
Stands—Vice—
Nye Tool & Machine Works.
Stationary Pipe Threading Die Heads (See Die Heads)—
Steel—All Kinds—
Ryerson, Jos., T., & Son, Inc.
Steel—Alloy—
Central Steel Co.
Timken Roller Bearing Co.
United Alloy Steel Corp.
Steel—Bit—
Central Steel Co.
Steel—Hot Rolled Strip—
Central Steel Co.
Steel—Special—
Andrews Steel Co.
Central Steel Co.
United Alloy Steel Corp.
Steel Band Wheels (See Band Wheels—Steel)—
Steel Bridges (See Bridges)—
Steel Bull Wheels (See Bull Wheels—Steel)—
Steel Castings (See Castings)—
Steel Couplings for Casing, Line Pipe, Drill Pipe and Tubing (See Couplings)—
Steel Crown Blocks (See Crown Blocks)—
Steel Derricks (See Derricks)—
Steel Fabricators—Structural—
Austin Co
Braden Co.
Graver Corp.
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Steel Fittings (See Fittings)—
Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Steel Plate Construction—
Chicago Bridge & Iron Works.
Graver Corp.
Kaw Steel Construction Co.
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.
Steel Sheets (See Sheets, Steel)—
Steel Valves (See Valves, Steel)—
Steel Walking Beams (See Walking Beams—Steel)—
Steel Wheels and Tug Rims—
International Derrick & Equipment Co.
Stills—
Chicago Bridge & Iron Works.
Graver Corp.
Kaw Steel Construction Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.
Stocks & Dies—
Borden Co.
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.
Structural Steel Fabricators (See Steel Fabricators)—
Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.
Sucker Rods (See Rods—Sucker)
Suction Pumps (See Pumps)—
Sulphuric Acid—
Eagle-Picher Lead Co.
Superheaters—Steam—
Power Plant Equipment Co.
Swabs—
Arbon, Paul, & Co.
Burt Corporation.
Guiberson Corp.
Simplex Equipment Co.
Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.
Swing Line Equipment—
Brooks Engineering Corp.
Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tank Cars (See Cars—Tank)—
Tank Cars Leased (See Cars)—
Tank Equipment—
Brooks Engineering Corp.
Oil Conservation Engineering Co.
Tanks—Bolted—
American Tank Co.
Butler Mfg. Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.
Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.
Tanks—Cylindrical—
Petroleum Iron Works Co.
Tanks—Elevated Steel—
Chicago Bridge & Iron Works.
Tanks—Field Storage—
American Car & Foundry Co.
American Tank Co.
Donovan Boiler Works.
Graver Corp.
Kaw Steel Construction Co.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.
Tanks—Horizontal Storage—
Graver Corp.
Kaw Steel Construction Co.
Maloney Tank Mfg. Co.
Tanks—Run Down—
Donovan Boiler Works.
Graver Corp.
Kaw Steel Construction Co.
Newton Process Mfg. Co.
Tanks—Truck—
American Tank Co.
Butler Mfg. Co.
White Co.
Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Pittsburgh-Des Moines Steel Co.
Tanks—Welded—
American Tank Co.
Chicago Bridge & Iron Works.
Taper Taps—
Hughes Tool Co.
Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.
Temper Screws (See Screws)—
Thermometers—Indicating and Recording—
American Schaeffer & Budenberg Corp.
Bristol Co.
Taylor Instrument Co.
Threading Machines—
Bignall & Keeler Machine Wks.
Cox & Sons Co., The.
Landis Machine Co.
Thread Protectors—
Spang & Co.
Tightener—Belt—
Victor Balata & Textile Belting Co.
Tires—Automobile—
Continental Supply Co.
Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.
Tongs—Back Up—
Williams, J. H., & Co.
Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.
Tongs—Casing—
Dunn Mfg. Co.
Guiberson Corp.
Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.
Tongs—Pipe—
National Transit Pump & Machine Co.
Tongs—Rotary—
Dunn Mfg. Co.
Tongs—Tool Joint—
Guiberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.
Tongs—Tubing—
Dunn Mfg. Co.
Tool Chests—Pipe—
Nye Tool & Machine Works.
Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Torches—
Oxweld Acetylene Co.
Tractor Oil (See Oil—Tractor)—
Tractors—
Cleveland Tractor Co.
International Harvester Co. of America.
Trailers—
Spencer Trailer Co.
Transmission Belt—Rubber—
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Transmission Lining—
Stanley Belting Corp.
Traveling Block—
Lucey Mfg. Corp.
Regan Forge & Engineering Co.
Wright Mfg. Co.
Trenchers—Vertical Boom—
Barber-Greene Co.
Trucks—Motor—
Ford Motor Co.
General Motors Truck Co.
Graham Brothers.
International Harvester Co. of America.
White Co.
Truck Tanks (See Tanks)—
Truck Tires (See Tires—Truck)—
Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.
Tubes—Boiler Steel—
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Sons, Inc.
Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Reading Iron Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Wheeling Steel Corp.
Tubing Catchers—
Continental Supply Co.
Dunn Mfg. Co.
Guiberson Corp.
Tubing Protectors (See Rod Guides)—
Tubular Goods—
Continental Supply Co.
Oil Well Supply Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.
Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.
Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.
Turbine Generators (See Generators—Turbine)—
Turnbuckle Derricks (See Derricks)—

U

Underground Tanks (See Tanks)
Underreamer Body Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.
Underreamers—
Bridgeport Machine Co.
Brown Tool Co., Inc.
Guiberson Corp.
Wilson Oil Tools Corp.
Unions—
Jefferson Union Co.
Kelly & Jones Co.

V

Valuations—
American Appraisal Co.
Valves—Balata—
Victor Balata & Textile Belting Co.
Valves—Blow-Off—
Homestead Valve Mfg. Co.
Valves—Brass and Bronze—
Homestead Valve Mfg. Co.
Kelly & Jones Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Mfg. Co.
Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.
Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.
Valves—Drop Forged Steel—
Edward Valve & Mfg. Co.
Vogt, Henry, Machine Co.
Valves—Gate—High and Low Pressure—
Chapman Valve Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kelly & Jones Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.
Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Valves—Metal Pump—
Durable Mfg. Co.
Valves—Pump—
United States Rubber Co.
Valves—Relief—Supersensitive—
Davis, G. M., Regulator Co.
Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works.
Powell, Wm., Co.
Reading Steel Casting Co.
Valves—Tank Vent—
Brooks Engineering Corp.
Oil Conservation Engineering Co.
Valves—Working Barrel—
Atlas Ball Co.
Axelson Machine Co.
D & B Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Northup Equipment Co.
Oil Well Supply Co.
Varnishes—
Arco Company, The.
Detroit Graphite Co.
Sherwin-Williams Co.
Ventilators—Rotary—
Swartwout Co.
Vises—Bench—
Nye Tool & Machine Works.
Vises—Pipe—
Nye Tool & Machine Works.
Vises—Post—
Nye Tool & Machine Works.

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.
Walking Beams—Steel—
Emsco Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Water Cooling Systems—
Power Plant Equipment Co.
Water Softeners and Filters—
Butler Mfg. Co
Graver Corp.
Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.
Weight Indicators—
Hughes Tool Co.
Welding Accessories—Electric—
Wilson Welder & Metals Co.
Welding and Cutting Apparatus—
Oxweld Acetylene Co.
Welding Machines—Electric—
Wilson Welder & Metals Co.
Welding Supplies—
Oxweld Acetylene Co.
Welding Wire—
Frick-Reid Supply Co.
Oxweld Acetylene Co.
Wilson Welder & Metals Co.
Well Shooting—
Eastern Torpedo Co.
Zero Hour Torpedo Co.
Wheels—Pipe Cutter—
Nye Tool & Machine Works.
Wheels—Steel Automotive—
Budd Wheel Co.
Winches—
Braden Co.
Brooks Engineering Co.
Oil Conservation Engineering Co.
Wire Lines (See Cables—Steel)—
Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.
Working Barrels—
Axelson Machine Co.
D & B Pump & Supply Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.
Wrenches—Closet Spuds—
Nye Tool & Machine Works.
Wrenches—Drop Forged—
Williams, J. H., & Co.
Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Mfg. Co.
Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works.

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for March

Runs

	Month	Dy. Av.
*Prairie Pipe Line Co.	3,844,000	124,000
Gulf Pipe Line Co.	1,032,048	33,292
Texas Pipe Line Co.	481,623	15,536
Magnolia Petroleum Co.	1,142,666	36,860
Cosden Pipe Line Co.	904,789	29,187
Empire Pipe Line Co.	682,764	22,025
*Sinclair Pipe Line Co.	1,488,674	48,054
*Other lines	8,091,000	261,000
Total March	17,668,564	569,953
Total Feb.	15,245,347	544,475
Difference	2,423,217	25,478

Shipments

	Month	Dy. Av.
†Prairie Pipe Line Co.	4,586,038	148,001
Gulf Pipe Line Co.	1,117,185	36,036
Texas Pipe Line Co.	759,387	24,496
Magnolia Petroleum Co.	1,490,078	48,067
Cosden Pipe Line Co.	633,864	20,447
Empire Pipe Line Co.	758,407	24,465
†Sinclair Pipe Line Co.	2,700,289	87,106
*Other lines	8,494,000	274,000
Total March	20,540,959	662,617
Total Feb.	19,168,415	618,333
Difference	1,372,544	44,284

Stocks

*Prairie Oil & Gas Co.	27,210,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line Co. and Gypsy Oil Co.	6,378,816
The Texas Company	3,759,040
Magnolia Petroleum Co.	5,142,309
Cosden Pipe Line Co.	1,856,367
Empire Pipe Line Co.	2,814,802
†Sinclair Crude Oil Purchasing Co.	21,100,000
Carter Oil Co.	14,600,000
*Other lines	9,900,000
Total March	94,761,334
Total February	96,242,376
Difference	1,481,042

*Estimated. †Prairie shipments also include Texas crude oil and Sinclair shipments include Texas and Wyoming crude oil.

Note—Stocks do not include approximately 5,900,000 bbls. held in storage on private tank farms and leases.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March:

	Feb. '26	Mar. '26
Nat. Transit	140,437.20	152,572.78
S. W. Pa. P. L.	82,218.00	92,161.74
Eureka P. L.	328,709.96	373,065.58
Buckeye P. L. (Macksburg)	275,240.87	327,422.18
Buckeye P. L. (Cleveland)	10,297.41	11,923.54
Buckeye P. L. (Lima, etc.)	117,052.32	135,330.32
Indiana P. L.	9,530.57	10,428.03
Cumberland P. L.	257,256.68	284,867.52
N. Y. Transit	17,816.08	18,958.88
Tide Water P. L.	136,339.08	154,702.25
Pure Oil	158,793.42	178,024.39
Emery P. L.	43,885.55	51,169.64
Indian Ref.	80,656.88	86,931.73
Paragon Dev.	25,650.67	26,590.23
Pittsburgh P. L.	6,649.29	6,801.52
Total	1,691,032.98	1,910,950.33
Daily average	60,394.03	61,643.56

Note—Indian Refining Co. also reported other receipts of 294,738.45 bbls. Paragon Refining Co. had other receipts of 174,511.17 bbls. Paragon Development had other receipts of 2,462.35 bbls. Pure Oil had other receipts of 64,360.22 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March:

	Feb. '26	Mar. '26
Nat. Transit	300,294.95	285,116.90
S. W. Pa. P. L.	320,351.13	389,473.31
Eureka P. L.	148,099.79	188,567.14
Buckeye P. L. (Macksburg)	122,324.18	130,098.28
Buckeye P. L. (Cleveland)	969.77	1,364.43
Buckeye P. L. (Lima, etc.)	705,531.60	744,048.97
Indiana P. L.	1,099,401.49	995,973.29
Cumberland P. L.	150,113.41	151,179.06
N. Y. Transit	526,231.48	579,234.50
Northern P. L.	122,498.92	130,218.72
Tide Water P. L.	143,555.36	174,944.54
Pure Oil	211,673.48	217,525.82
Emery P. L.	44,896.24	48,128.83
Paragon Ref.	118,033.56	159,926.73
Indian Ref.	421,529.21	420,774.92
Paragon Dev.	23,864.81	33,731.97
Pittsburgh P. L.	6,292.15	7,088.04
Total	4,465,661.53	4,657,395.45
Daily average	159,487.91	150,238.56

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky, at the close of February and March, were as follows:

	Feb. '26	Mar. '26
Nat. Transit	1,010,062.31	1,040,222.33
S. W. Pa. P. L.	668,593.48	690,133.67
Eureka P. L.	1,514,235.47	1,497,216.56
Buckeye P. L. (Macksburg)	372,524.75	351,943.86
Buckeye P. L. (Cleveland)	66,885.32	52,018.53
Buckeye P. L. (Lima, etc.)	2,402,586.47	2,301,324.72
Indiana P. L.	550,608.52	558,421.46
Cumberland P. L.	583,281.41	593,665.61
Southern P. L.	532,095.25	488,804.68
N. Y. Transit	721,540.07	731,527.82
Northern P. L.	481,120.13	468,451.24
Pure Oil	405,108.77	429,500.88
Emery P. L.	29,360.37	32,243.81
Paragon Ref.	71,433.17	85,108.55
Indian Ref.	159,991.34	123,338.21
Paragon Dev.	5,465.24	4,370.50
Pittsburgh P. L.	4,502.80	.....
Total	9,579,394.88	9,438,292.43
Decrease	279,775.48	141,102.45

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of February and March showing the gross stocks of the above fields:

	Feb. '26	Mar. '26
Pennsylvania	3,895,733.10	3,842,525.79
Lima	1,022,956.97	958,283.05
Kentucky	1,181,936.95	1,166,146.58
Mid-Continent	3,396,996.28	3,408,098.00
Illinois	81,771.58	63,239.01
Total	9,579,394.88	9,438,292.43

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1923	1924	1925	1926
January	75,790	62,638	56,831	55,630
February	71,092	62,023	60,606	60,394
March	76,592	68,721	60,575	61,644
April	75,514	71,056	63,062	.....
May	77,365	63,942	59,217	.....
June	77,593	63,230	61,270	.....
July	71,879	64,208	62,639	.....
August	76,910	59,942	59,686	.....
September	72,358	62,930	62,510	.....
October	76,256	64,976	60,995	.....
November	70,762	56,282	59,360	.....
December	69,271	55,814	57,974	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1923	1924	1925	1926
January	171,067	145,518	157,889	156,056
February	164,219	148,732	160,863	159,488
March	185,487	147,098	154,591	150,239
April	170,751	147,611	151,429	.....
May	177,102	134,997	146,995	.....
June	173,598	143,010	149,467	.....
July	168,330	124,187	161,328	.....
August	142,776	123,120	161,730	.....
September	137,266	127,325	156,719	.....
October	134,597	123,170	145,388	.....
November	131,426	124,400	143,582	.....
December	139,909	151,392	150,162	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1924	1925	1926
January	12,907,202	11,363,276	9,859,170
February	11,844,068	11,152,924	9,579,394
March	10,906,752	11,158,297	9,438,292
April	10,922,742	11,052,082	.....
May	11,335,309	11,207,562	.....
June	11,544,204	11,093,796	.....
July	12,062,361	11,067,453	.....
August	12,221,676	10,974,481	.....
September	12,206,836	10,781,753	.....
October	12,664,061	11,086,850	.....
November	12,268,530	11,052,192	.....
December	11,583,680	10,458,445	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

	Recpts.	Shpmts.	Stocks
1925—			
March	3,177.21	3,354.30	11,898.74
April	3,040.41	1,780.11	13,159.04
May	2,814.99	5,719.90	10,254.13
June	3,063.75	1,221.83	12,085.05
July	2,639.34	3,174.10	11,550.29
August	3,216.97	1,577.99	13,189.27
September	2,939.99	5,352.05	10,767.21
October	2,859.75	1,499.34	12,127.62
November	2,759.66	2,671.32	12,283.40
December	2,661.87	3,441.67	11,503.60
1926—			
January	2,990.16	1,478.35	13,015.41
February	2,580.23	2,776.19	12,819.45
March	2,764.62	1,732.77	13,841.30

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, April 1	2,734,910.61
Runs from wells	723,397.91
Other receipts	472,013.49
Regular deliveries	477,346.91
Other deliveries	520,627.61

The amount of Illinois oil run by the Tide Water Pipe Co. in March was 29,902.81 bbls. and deliveries were 47,279.94 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1925—		
April	622,865.14	637,242.85
May	692,671.94	568,573.62
June	700,090.46	589,535.24
July	724,481.26	564,713.19
August	673,652.38	650,649.97
September	706,434.87	510,697.61
October	706,532.00	633,682.32
November	664,556.30	488,449.19
December	665,086.97	578,938.47
1926—		
January	665,243.62	516,083.76
February	632,611.99	506,310.51
March	753,300.74	524,626.95

The Tide Water Pipe Co., Ltd., also delivered in March 127,929.20 bbls. of Oklahoma oil. The total deliveries of all grades by the Tide Water were 350,153.68 bbls.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS						
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
December	6,226	12,129	28,452	20,193	9,677	76,677	.....	4,839	4,871	.....	9,710	86,387
January	9,355	13,484	32,581	19,387	5,097	79,804	.....	.....	.....	65	65	79,869
February	13,111	9,464	28,214	24,393	20,107	95,289	.....	.....	.....	.....	.....	95,289
March	7,000	2,516	48,839	16,612	16,903	91,870	.....	.....	.....	.....	.....	91,870

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
December	12,806	20,548	35,613	15,064	30,613	114,644	13,129	25,387	6,935	5,516	50,967	165,611
January	12,451	19,484	49,451	12,645	21,903	115,934	21,903	25,871	5,645	4,871	58,290	174,224
February	14,643	16,071	60,107	9,464	20,750	121,035	23,321	50,250	6,286	6,714	85,571	206,606
March	28,387	15,935	81,742	16,290	34,258	176,612	19,355	44,097	7,096	5,294	75,842	252,454

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
April:	Month	17,959,052	14,055,450	12,595,365	2,971,110	7,560,230	1,767,077	3,744,691	3,084,000	62,837,570
	Daily average	598,655	468,515	423,179	99,037	252,008	58,903	91,490	102,800	2,094,586
May:	Month	18,820,328	14,443,675	13,077,697	3,493,366	11,813,996	1,886,752	2,799,542	3,167,300	69,503,556
	Daily average	607,107	465,925	421,861	112,686	381,097	60,863	90,308	102,171	2,242,019
June:	Month	19,388,135	13,832,970	12,602,540	3,329,440	9,200,372	1,830,965	2,754,498	3,389,000	66,127,920
	Daily average	642,938	461,099	420,085	107,643	306,672	61,032	91,816	109,000	2,204,264
July:	Month	20,411,049	14,263,565	12,327,598	3,686,675	7,835,819	1,898,178	3,129,199	3,348,000	66,910,083
	Daily average	658,421	460,115	397,984	118,925	252,768	61,231	100,942	108,000	2,158,390
August:	Month	21,005,580	14,441,040	11,936,079	3,658,087	7,450,580	1,858,543	3,250,448	3,177,000	66,677,357
	Daily average	677,599	465,480	385,032	114,777	240,341	56,727	104,853	102,484	2,150,883
September:	Month	20,062,763	14,835,040	11,264,890	3,393,270	6,457,950	1,776,570	3,235,625	3,212,000	64,228,108
	Daily average	668,759	494,168	375,496	113,109	215,265	59,219	107,854	107,067	2,140,937
October:	Month	20,015,076	14,921,199	11,196,511	3,477,146	6,409,281	1,871,830	3,294,990	3,248,000	64,534,033
	Daily average	645,648	481,329	361,178	112,166	206,751	60,382	109,500	104,774	2,081,743
November:	Month	19,095,907	14,590,920	10,650,087	3,221,760	6,237,955	1,758,882	3,088,121	2,992,000	61,325,693
	Daily average	636,530	486,366	355,003	107,392	197,599	58,629	102,937	99,753	2,044,190
December:	Month	19,249,711	14,123,848	10,930,455	3,308,816	6,047,883	1,763,966	3,187,164	3,086,900	61,698,743
	Daily average	620,959	455,608	352,595	106,736	195,093	56,902	102,812	99,563	1,990,283
January:	Month	19,069,563	13,674,813	10,880,514	3,250,536	5,489,620	1,606,952	3,136,280	3,014,000	60,122,578
	Daily average	615,147	441,123	350,994	104,856	177,084	51,835	104,396	97,226	1,939,438
February:	Month	17,162,963	12,387,620	9,689,120	2,877,812	4,756,836	1,583,904	2,769,605	2,931,000	54,159,860
	Daily average	612,999	442,415	346,040	102,779	169,887	56,568	98,914	104,678	1,934,281
March:	Month	18,825,786	14,312,886	10,757,341	3,334,887	5,115,837	1,889,946	3,151,250	3,216,000	60,603,933
	Daily average	607,283	461,706	347,011	107,577	165,027	60,966	101,653	103,742	1,954,972
Total 12 months		230,967,514	169,873,086	138,018,497	39,802,805	84,066,359	21,493,565	36,641,413	37,865,200	758,728,439
Daily average		632,620	465,433	378,133	109,049	230,319	58,886	100,388	103,740	2,078,708

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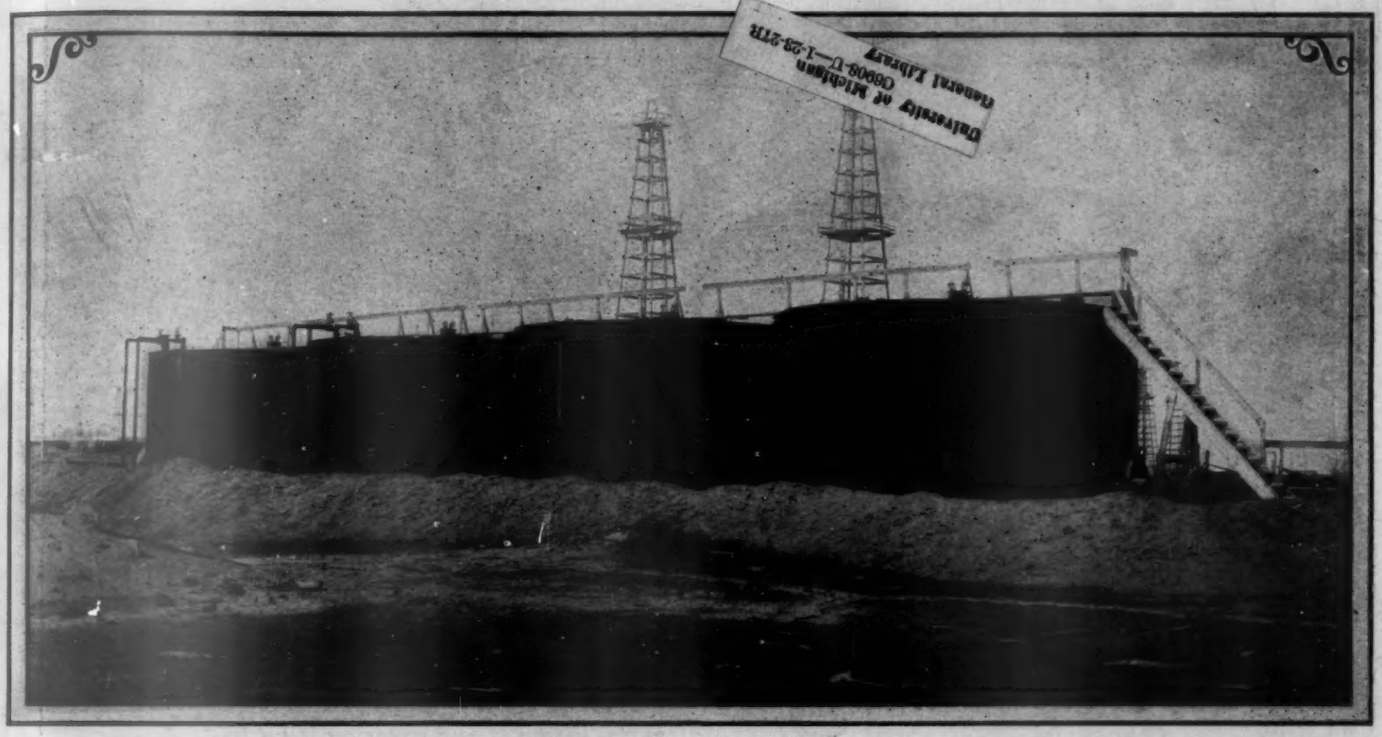

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Advertisers' Index on Page 25 Table of Contents on Page 26

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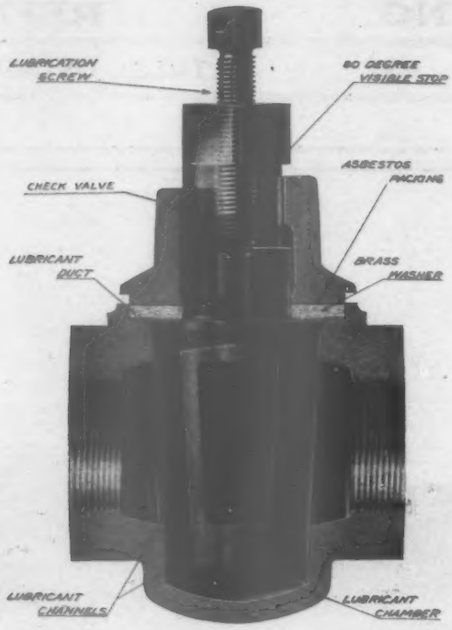

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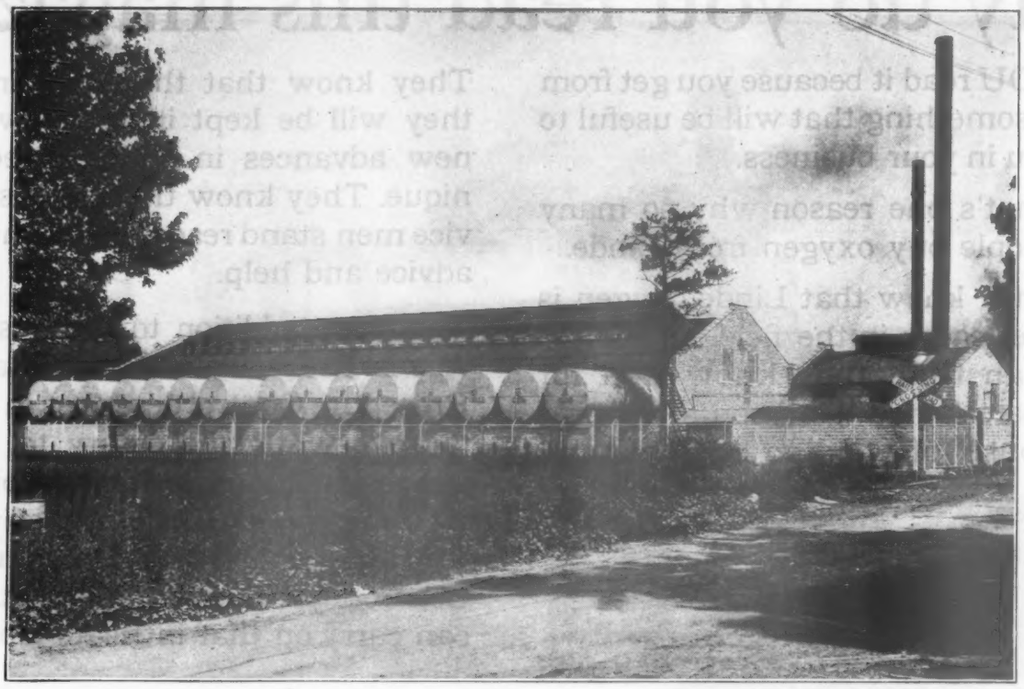


Battery of Tanks of Wofford Oil Company, Birmingham, Alabama, protected against rust with Eagle Sublimed Blue Lead

Proving the economy of lead paint for protecting all metal surfaces against rust

"HOW *long* will this paint protect the tanks and metal surfaces of my plant against rust, weathering and destructive gas fumes? How much does it cost in the long run? What do painters think about it?" These are questions every plant engineer or superintendent should ask himself about the metal-protecting paint he uses.

Eagle Rust Preventive Paints—either Red Lead or Sublimed Blue Lead—offer lasting economy, most complete rust-prevention and weather-protection. They are members of the distinguished Eagle Lead-in-Oil family, produced by a vast organization of specialists trained in supplying the lead requirements of both individuals and industries.

And lead serves nowhere better than in the economical protection of metal surfaces. Eagle Red Lead and Eagle Sublimed Blue Lead are both ground in pure linseed oil. They grip metal surfaces tenaciously, and their protection is enduring. Good painters like and recommend them.

We will gladly send you interesting information about Eagle Red Lead or Eagle Sublimed Blue Lead—the economical rust preventive paints.

The* EAGLE-PICHER LEAD COMPANY · 868-D 134 *North La Salle Street* · *Chicago

EAGLE
RUST PREVENTIVE PAINTS
Red Lead and Sublimed Blue Lead

[PRODUCERS OF LEAD AND ALLIED PRODUCTS]

Sales Offices: CINCINNATI, CLEVELAND, PITTSBURGH, PHILADELPHIA, NEW YORK, MINNEAPOLIS BOSTON, BUFFALO, DETROIT, BALTIMORE, NEW ORLEANS, KANSAS CITY, ST. LOUIS, JOPLIN

Manufacturing Plants: CINCINNATI, NEWARK, N. J., GALENA, KAS., HENRYETTA, OKLA., PICHER, OKLA. CHICAGO, EAST ST. LOUIS, ILL., ARGO, ILL., JOPLIN, MO., HILLSBORO, ILL., ONTARIO, OKLA.

When Your Reputation Hangs by a Thread

Good threads of uniform taper are absolutely essential for pipe and casing. Thousands of dollars of expense and waste can be caused by a badly cut thread. Hoffman and Page of Eastland, Texas, have installed a 6" LANDIS Pipe Threading and Cutting Off Machine to insure satisfactory threads and to maintain their reputation for good work.

This 6" LANDIS is of our latest design. It has a gear box and single pulley drive. All gears are cut from steel and run in an oil bath.

A reversing mechanism is located in the gear box and is controlled by a lever located conveniently for the operator. It is not necessary to cross belts or throw a reversing switch.

The front and rear chucks have universal adjustment. The movement of one jaw operates three jaws.

The rear chuck is equipped with flange grips.

The front chuck is lever operated and quick acting.

The LANDIS long life tangential chaser is employed.

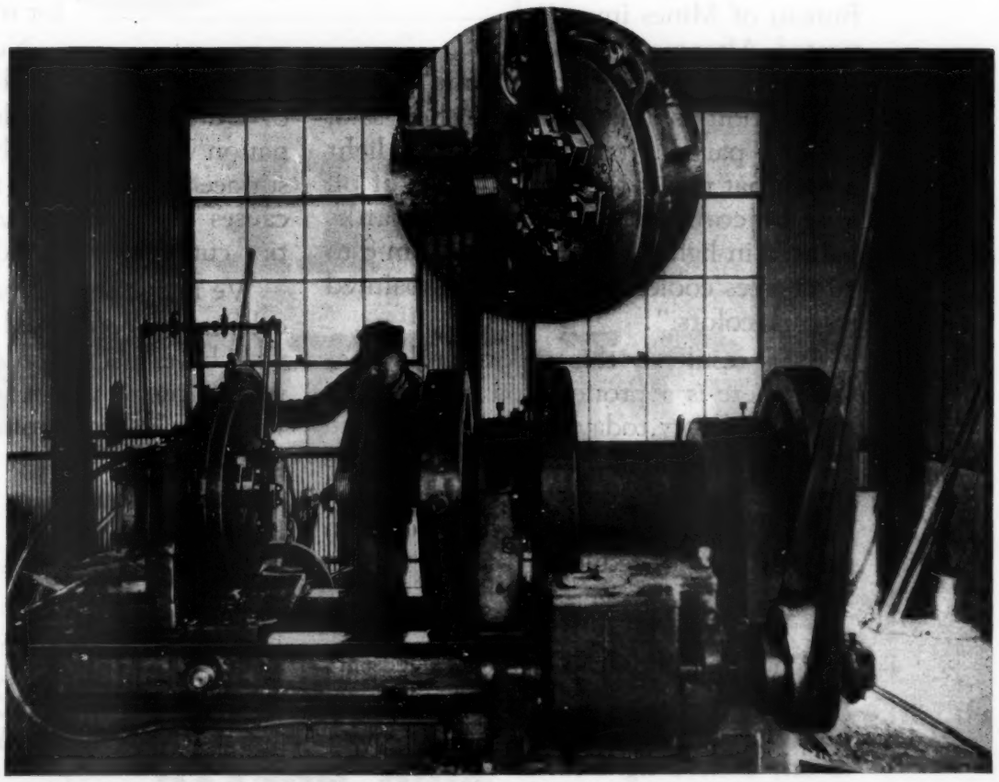
Take advantage of this powerful, efficient and economical machine. Insure your reputation for good threads, by installing a LANDIS now.

When do you want to talk this over with our representative?

At least, write for a catalog.

LANDIS MACHINE COMPANY, Waynesboro, Penna.

Detroit Office: 5928 Second Blvd.



DOMESTIC AGENTS: Marshall & Huschart Machinery Co., Chicago, Ill.; Marshall & Huschart Machinery Co. of Indiana, Indianapolis, Ind.; Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; R. B. Whitacre & Co., St. Paul, Minn.; Hamilton Machinery Co., Chattanooga, Tenn.; Young & Vann Supply Co., Birmingham, Ala.; Woodward, Wight & Co., New Orleans, La.; Jos. T. Ryerson & Son, Houston, Texas; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.; Salt Lake Hardware Co., Salt Lake City, Utah; Harry M. Euler Co., Portland, Ore.; Hallidie Machy. Co., Seattle, Wash.; Hallidie Co., Spokane, Wash.; Herberts Machinery & Supply Co., San Francisco and Los Angeles, Calif.

CANADIAN AGENTS: Canadian Fairbanks-Morse Co., Toronto and Montreal.

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LANDIS TRADE MARK

A shield against the thirsty sun

Storage tanks painted with white-lead reflect the sun's rays and cut evaporation losses

EVERY day the thirsty sun takes away many gallons of oil through evaporation. During a year this loss amounts to thousands of dollars.

To find out how to reduce this loss, the U. S. Bureau of Mines investigated. After many tests they made their report. "Some of this evaporation is unavoidable," they said, "but by painting tanks in white or light colors that reflect the heat the loss of oil may be considerably reduced. Tanks painted in light colors keep oil from 8 to 10 degrees cooler than do tanks painted in dark colors."

As a result of this report and other tests, there is a pronounced tendency in the oil industry today towards white and light-colored tanks. And more and more it is becoming the practice to use Dutch Boy white-lead for finishing coats over an undercoating of red-lead.

An ideal finishing coat

Dutch Boy white-lead has the necessary whiteness to make it an ideal paint for finishing coats. Moreover, it can be tinted to any desired light color. In addition it gives added protection to that already provided by the red-lead undercoating.

For oil-refining you want litharge of correct physical character and extreme chemical purity. Such litharge is made by the makers of Dutch Boy red-lead and Dutch Boy white-lead. At all times you can rely on its unvarying uniformity. Our nearest warehouse can give you quick shipment in any quantity you desire

An undercoating of pure red-lead, such as Dutch Boy red-lead, is generally accepted throughout the industry as the best protection for metal surfaces.

Next-to-metal coats of Dutch Boy red-lead and finishing coats of Dutch Boy white-lead make a combination which effectively protects the metal surface against air and moisture—the chief causes of corrosion. And this combination cuts evaporation losses to a minimum.

We maintain a Department of Technical Service, conducted by paint specialists who have made a study of paint for protecting metal in the oil industry. They will be glad to consider your particular paint problems.

Write them in care of our nearest branch.

NATIONAL LEAD COMPANY

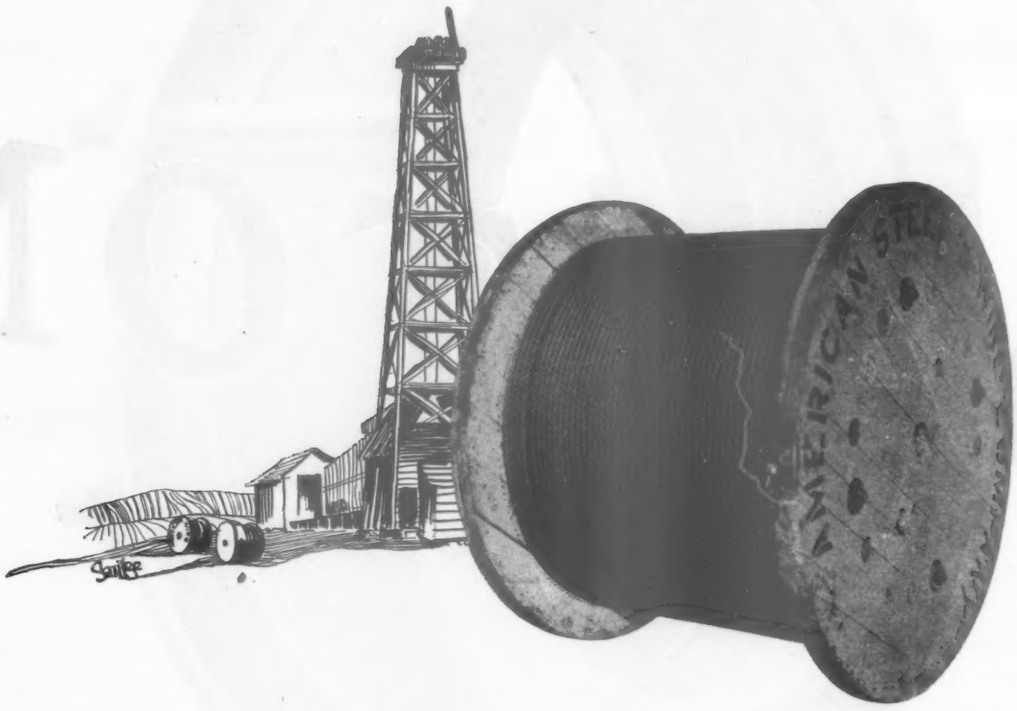
New York, 111 Broadway — Boston, 131 State St.
Buffalo, 116 Oak St. — Chicago, 900 West 18th St.
Cincinnati, 659 Freeman Ave. — Cleveland, 820 West Superior Ave.
St. Louis, 722 Chestnut St. — San Francisco, 485 California St.
Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Ave.
Philadelphia, John T. Lewis & Bros. Co., 437 Chestnut St.

DUTCH BOY WHITE-LEAD

PIPE COUPLINGS

THE DAYTON PIPE COUPLING CO.
DAYTON, OHIO

Speed in Drilling



"Making hole" rapidly . . . piling up footage . . . getting on the sand quickly . . . depends to a great extent on the consistent performance of the drilling line.

For years American Wire Line has been the favorite drilling cable with the boys with whom "making hole" fast is a habit.

American Wire Rope is a standard product of one of the oldest and most famous wire rope making organizations in America. And the record made by American drilling lines is one of the great accomplishments in the Industry.

We stock American Wire Rope at all of our many supply stores . . . one of them convenient to your job . . . making an easily accessible source of supply for your wire line needs.

INTERNATIONAL SUPPLY CO.
TULSA ISC INTERNATIONAL SUPPLY COMPANY **OKLA.**

The No. 1A is the same as the No. 1 except that it is equipped with a ratchet for work where space is restricted.

No. 1A Nye Toledo Type Pipe Threader, complete .....$12.00 net
West of Rocky Mountains.....$12.75

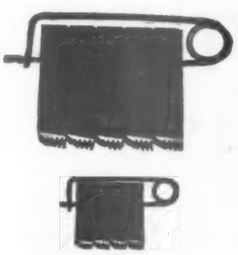
NYE—*The Die Man*

Pipe Tool Maker to the American Plumber and Steamfitter

The rugged construction and few working parts account for the simplicity and durability of these Nye Toledo Type models. They do the work easily and efficiently.

No. 1 Nye Toledo Type Pipe Threader, complete .....$9.60 net
West of Rocky Mountains.....$10.20

When you think of dies, Think of Nye's!



Nye Toledo Type Chasers

Also fit Nos. 1 and 2 Toledo Type Die Stocks.

Each set is guaranteed in every particular. Will cut much easier than other similar dies.

No. 1, 1" to 1⅜".....$ .75 per set net
No. 1, 2" ..... 1.25 per set net
No. 2, 2½" to 4"..... 3.60 per set net

Telling a jobber to send you "some dies" is like telling a conductor to let you off at "some street." Say Nye's!

It is as important to know what you are buying as it is to know where you are going.

There is as much difference between dies as there is between streets.

Nye Dies

Are the short cut to a finished job. They save time, temper, and material.

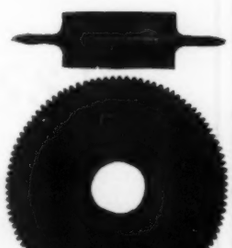
Nye dies cut faster, smoother and easier than any other.

Made of better steel, they are better in every way.

When you're in a hurry, get off at Nye Street!

Say the size—
and say Nye's!

HARRY G. NYE.



Nye thin blade cutter wheel, made to fit all standard makes of pipe cutters, and guaranteed against breakage in use. Made both in smooth and knurled edge.

THE NYE TOOL & MACHINE WORKS
4120-30 Fullerton Ave.,
CHICAGO, ILLINOIS

Nye Saunders Pipe Cutters

No. 1 ..... $ 1.80 net
No. 2 ..... 2.70 "
No. 3 ..... 6.60 "
No. 4 ..... 10.80 "
No. 5 ..... 16.80 "

Nye Drop Forged Pipe Cutter

No. 1-A ⅛ to 1¼" ..... $2.25 net
No. 2-A ⅛ to 2" ..... 3.00 net
No. 3-A 1 to 3" ..... 5.00 net

Nye Barnes Pipe Cutters

No. 1 ..... $ 2.25 net
No. 2 ..... 3.00 "
No. 3 ..... 5.00 "
No. 4 ..... 10.00 "
No. 5 ..... 15.00 "
No. 6 ..... 20.00 "

Gulf Refining Company

OKLAHOMA – TEXAS – LOUISIANA

Refiners of

PETROLEUM

GASOLINE
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PARAFFINE WAX
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Red and Pale Paraffine Oils

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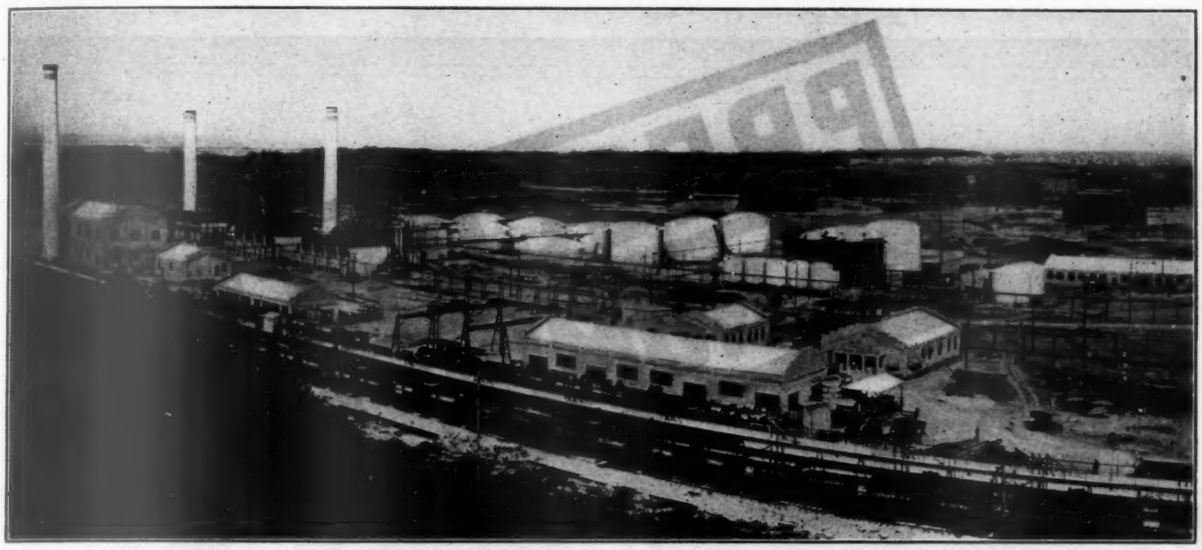
Galveston, Texas



This big plant of the Pure Oil Company at Smith's Bluff, Texas—one of the newest and most modern refineries on the Gulf Coast—is safeguarded from fire throughout by the Foamite *stationary pumping system and* Foamite *portable equipment*

Equipped to kill fire *before fire kills business!*

THE Pure Oil Company insists upon proven, unfailing fire protection because it assures *continuous operation.*

When fire cripples a plant, overhead continues but no profits are made, the organization disintegrates, shipments stop and customers do business elsewhere!

Therefore the big modern refinery of this Company at Smith's Bluff, Texas—pictured above—is completely protected by the *Foamite* System.

Storage tanks, rundown tanks, high pressure stills, pump houses, warehouses, boiler house and loading racks—all are equipped to smother any fire outbreak under genuine Firefoam.

Two other important Pure Oil properties—the Heath Refinery at Newark, Ohio, and the Cabin Creek Refinery at Cabin Creek, W. Va., also have *Foamite* Protection.

* * *

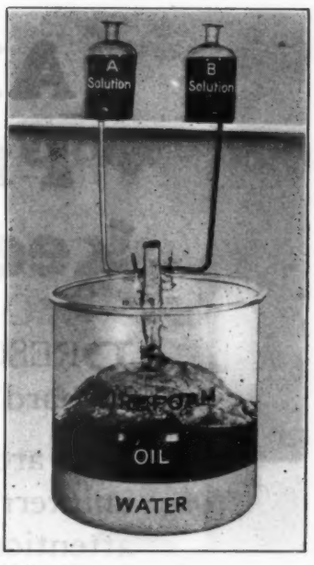
It would be difficult to point out any other field of specialized engineering in which success has been so significant as that of Foamite-Childs engineers in safeguarding oil property from fire.

Much of this success is due, of course, to the foaming agent, Firefoam Liquid, employed in *Foamite* equipment and exclusively under the distributing control of Foamite-Childs Corporation.

* * *

Through representatives in centers convenient to all the principal oil producing and refining centers, we are ready to recommend and to furnish specifications for the type of protection your particular fire hazards call for.

FOAMITE-CHILDS CORPORATION
Fire Protection Engineers and Manufacturers
151 Turner Street, Utica, N. Y.



© F-C Corp.

Laboratory illustration of the Foamite *method which, applied by Foamite-Childs engineers, has saved millions of dollars' worth of oil property from destruction by fire.*

Foamite-Childs Protection

A Complete Engineering Service

Against Fire

A Prescott-Menominee Main Line Station Pump — daily capacity 26,000 barrels.

All along the line Prescott Pumps keep the oil moving

PRESCOTT-MENOMINEE Main Line Pumps do a hard job well—do it efficiently, economically.

They are built for expected hard service—continuous, uninterrupted operation, overloads, few repairs, little attention. Every feature of their design and manufacture has been proved by service.

Engineers specify Prescott-Menominee on performance records—what they actually do—economically.

Let us send you catalogs and data.

The Prescott Company

Menominee, Michigan, U. S. A.

OGJ5-20Gray

WICO

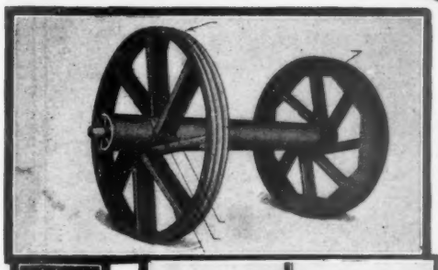
To the Delegates
at the Annual Convention
of the
Natural Gas Association
of America

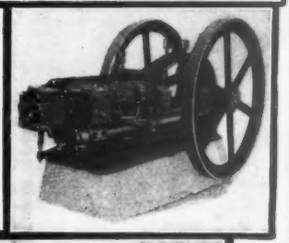
GREETINGS

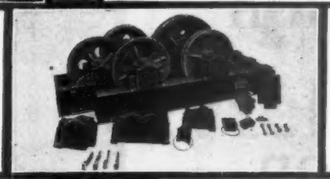
Before you go home visit the Wico Tulsa Factory Branch. Learn of the scope of our Mid-Continent Service.

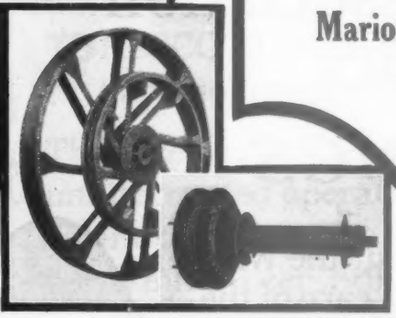
WICO ELECTRIC CO. SPRINGFIELD MASS.

WHERE EVER there is oil THE MARION LINE of OILWELL MACHINERY gets it to the surface at less cost









ON THE FINGERS OF ONE HAND

Can be enumerated the essentials that make the Marion Line of Oil Well Equipment Supreme.

1. **HEAVY DUTY**—No matter what conditions are encountered in drilling or pumping, this machinery will stand the test.
2. **SIMPLICITY**—There is nothing complicated in its design. Just enough parts are used to guarantee strength and efficiency.
3. **ENDURANCE** — Made of steel and iron, insures against fire hazard and losses from rapid depreciation as with wooden equipment.
4. **STRENGTH** — Note the scientific construction of all the Marion Line. Hi-test Sucker Rods not welded; Permanent Stops on Hub of Band Wheel. Everything built to give maximum strength.
5. **ECONOMY** — On account of its strength, endurance, and efficiency it is the most economical to use for either drilling or pumping.

Marion Machine, Foundry & Supply Co.
Marion, Indiana

THE MARION LINE

MARION MACHINE, FOUNDRY & SUPPLY CO.,
Marion, Indiana.

Gentlemen:

We are interested in the following equipment:

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Please send Bulletins covering same.

Name .....

City .....

State .....

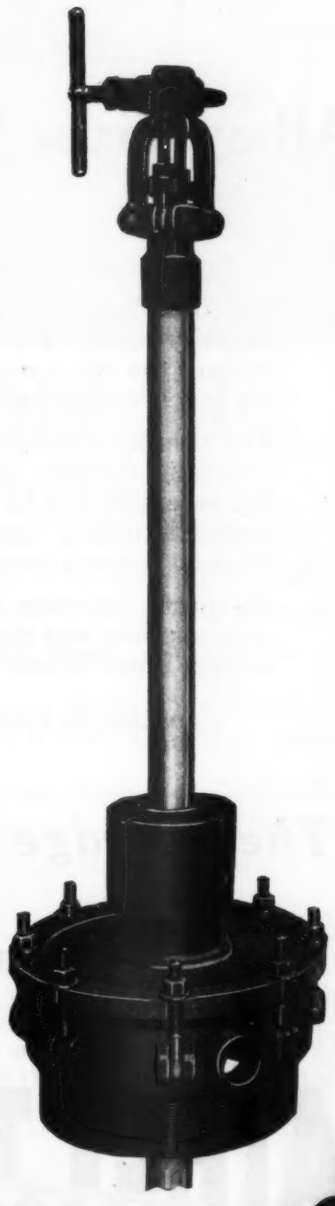
It's a Wilson

15 years of success backs every WILSON and WILLARD CIRCULATING HEAD

The simplest and most successful Circulating Head is a member of the Wilson family—for fifteen years it has been rendering one hundred per cent satisfactory service, meeting every requirement of standard drilling.

With this head you can save much time. The tools can be removed from or returned to the well and circulation controlled without disconnecting a single pipe. Quick access to the packing is a feature. It can be unclasped in a few moment's time. A very powerful clamping action is obtained upon the line.

Made in two sizes—standard type and extra heavy type, the latter being for service in wells where large cables are used.



Send for illustrated folder and specifications.

Wilson Oil Tools Corporation
DISTRIBUTORS FOR
Wilson & Willard
MANUFACTURING COMPANY

Factory and Distributor's Office — It's a Wilson — 2301 East Vernon Ave.
Los Angeles, Calif.

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Over all Trails

Athey Truss Wheel Wagons Provide Dependable Transportation

The quest for oil leads over all trails. And usually with oil is found—MUD.

Through deep mud, loose sand, bad roads or no roads at all, Atheys carry capacity loads. The broad, rigid steel track lies flat on the ground and bridges the soft spots with a never-ending highway of steel over which pass the track wheels carrying the load.

The ease with which this wheel is propelled is surprising. It is made of steel—strong, durable, trouble-proof, with roller bearing construction. The entire assembly can be rolled on a level floor by the push of a hand. This almost frictionless type of track-laying wheel makes possible the carrying of 30 to 50% more tonnage with remarkable savings in tractive power.

No matter whether you are "wildcatting" or permanently "spudded in," get your supplies and materials on time when you need them by hauling with Athey Truss Wheel Wagons.

Capacity, 10 tons. Let us send you further information and prices.

"They Bridge *the Soft Spots"*

ATHEY TRUSS WHEEL COMPANY
130 No. Wells St., Chicago, U. S. A.
Cable Address: "Trusswheel, Chicago"

The Baldwin Locomotive Works, Foreign Representatives, Philadelphia, Pa.

ATHEY TRUSS WHEEL WAGON
IT BRIDGES THE SOFT SPOTS

Barnsdall Defeats Old Sol with Aluminum Paint

ALUMINUM Painted tank-cars minimize evaporation for the Barnsdall Refining Company of Barnsdall, Oklahoma.

The silvery lustre of Aluminum Paint *reflects* the sun's heat, keeps the oil *cool.*

Decreased evaporation means increased profits.

Paint all oil-containers with Aluminum Paint. Tanks at the wells; stills, agitators, storage and settling-tanks at the refinery; storage-tanks of bulk stations; tank trucks and tank-cars.

Wherever the sun shines, evaporation costs you money. Save it with Aluminum Paint.

Our new illustrated booklet—"Aluminum Paint—A Step Ahead in Industrial Painting"—gives complete details. Write for a copy today.

Brief Facts About Aluminum Paint

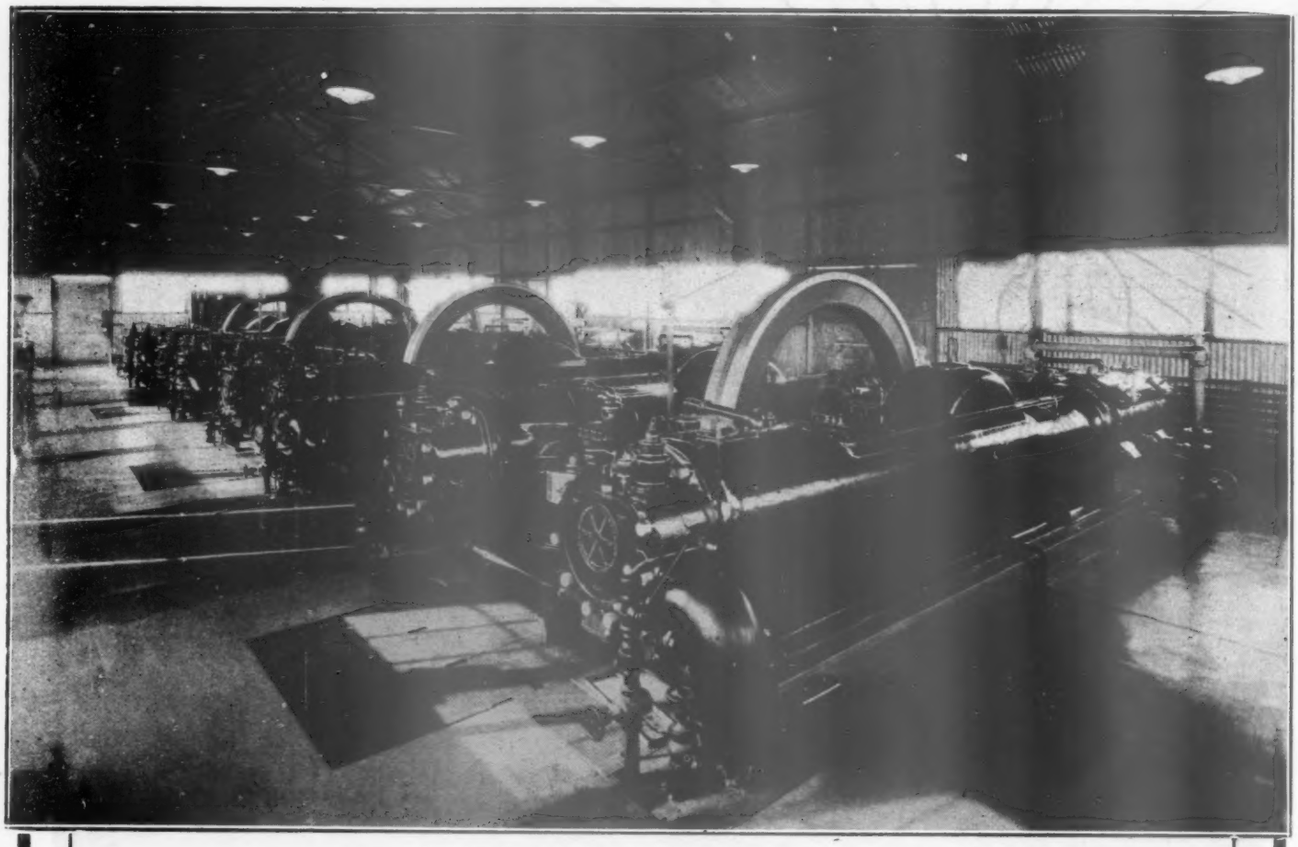
—consists of Aluminum Bronze Powder mixed with a suitable vehicle of oil or varnish.
—keeps tank interiors and contents cool by reflecting sun's heat.
—costs no more than ordinary paints.
—500-700 square feet coverage per gallon.
—single coat completely hides original color of tank—two coats give durable protection.
—Fumes and gases have little effect on reflecting lustre.
—Cuts evaporation—protects equipment.
—"IT LEAFS".

Aluminum Paint

Aluminum Company of America
2417 Oliver Building Pittsburgh, Pa.

Offices in Seventeen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM



Cut Shows 4 225-HP. Watts-Miller Gas Engine Driven Gas Compressors

Note:-The unusually heavy and staunch construction, conservatively rated and of utmost simplicity. It has won the hearty indorsement of many users.

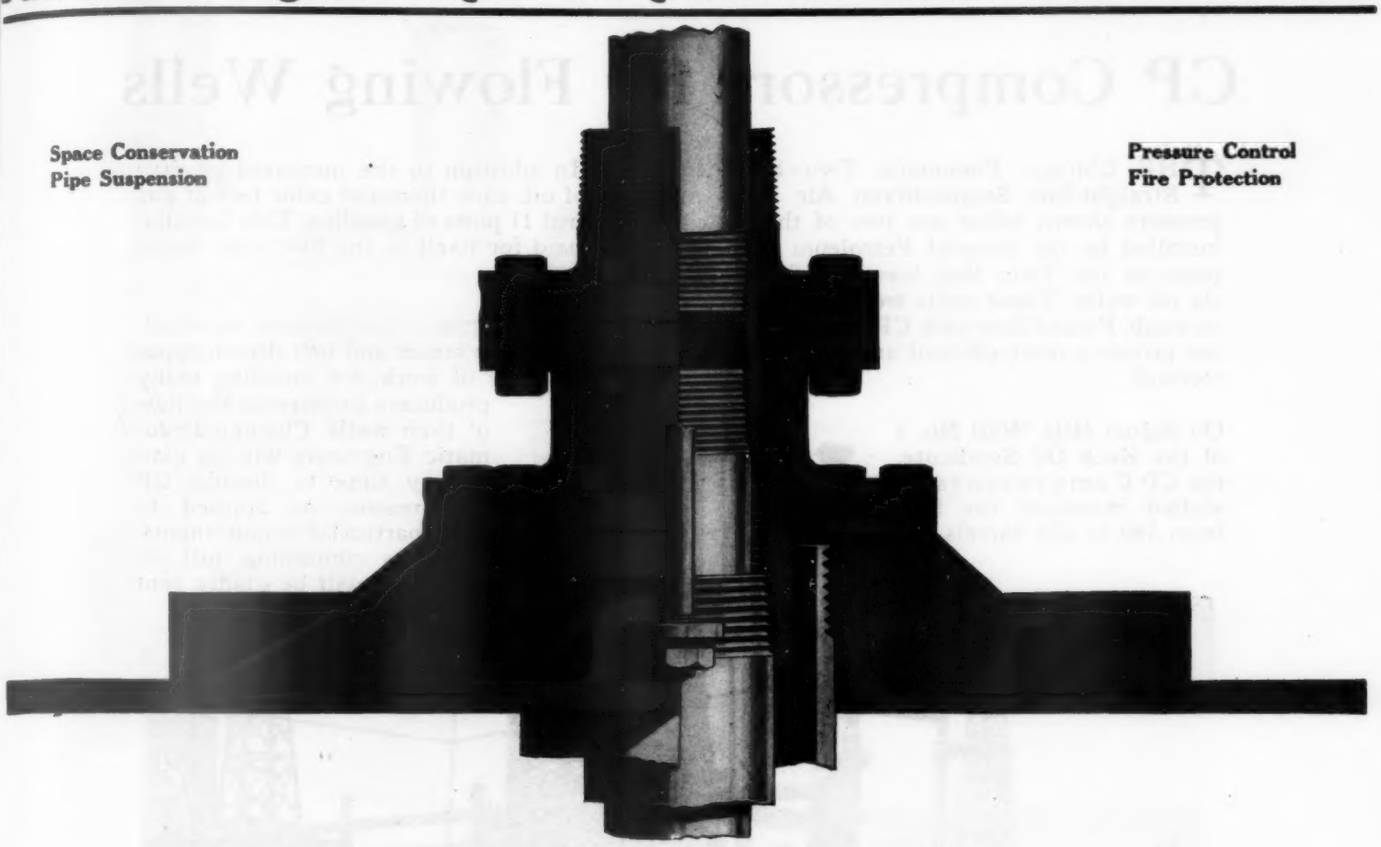
The Miller Improved Gas Engine Co.

Springfield, Ohio

Famous Regan Pipe Suspension and Control Head

Space Conservation
Pipe Suspension

Pressure Control
Fire Protection



Eliminate Old Style Casing and Gas Packing Clamps

Now you can retain the desired suspension in the casing strings *after* making surface landing and casing has been set, without bothering with the cumbersome and inefficient old style casing or gas packing clamps. The Regan Control Head permits of perfect pipe suspension.

To better meet the growing demand for Regan Equipment we have placed Lew D. Hilton in charge of Mid-Continent service, with headquarters at 1521 Post-Dispatch Building, Houston. Get in touch with him. Tulsa office at 406 West First St. New York City office at 75 West Street.

Regan

Forge & Engineering Co.

San Pedro California

Quality – Wrought on the Forge of Experience

CP Compressors for Flowing Wells

THE Chicago Pneumatic Two-Stage Straight-line Steam-driven Air Compressors shown below are two of the six installed by the General Petroleum Company on the Twin Bell lease for flowing six oil wells. These wells were previously on swab. Forced flow with CP Compressors has proven a more efficient and economical method.

On Signal Hill, Well No. 1 of the Keck Oil Syndicate, the CP Compressors installed increased the flow from 180 to 375 barrels per day. In addition to the increased production of oil, each thousand cubic feet of gas returned 11 pints of gasoline. This installation paid for itself in the first nine weeks of operation.

Chicago Pneumatic Compressors, especially designed in steam and belt-driven types for this type of work, are enabling many producers to increase the flow of their wells. Chicago Pneumatic Engineers will be glad at any time to discuss CP Compressors as applied to your particular requirements. Bulletins containing full information will be gladly sent upon request.

Chicago Pneumatic Tool Company

6 East 44th Street, NEW YORK, N. Y.

*Sales and *Service Branches all over the World*

*Birmingham	Dallas	*Los Angeles	*Philadelphia	*Seattle	Bogota	Copenhagen	Helsingfors	*London	Moncton	*Paris	*Sao Paulo	Timmins
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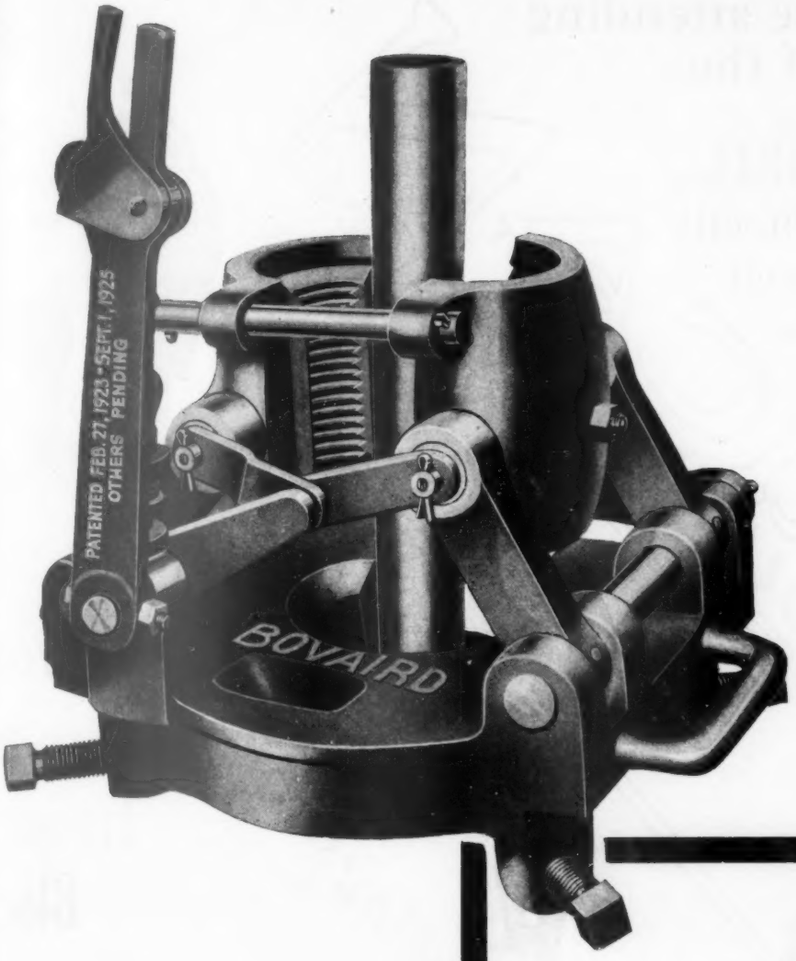
*Cleveland	Houston		*San Francisco	*Berlin	Calcutta			*Milan	Oslo	Santiago	Tampico	*Winnipeg

Canadian Pneumatic Tool Company, Ltd., Montreal, manufacturers of Chicago Pneumatic products in Canada
Consolidated Pneumatic Tool Company, Ltd., London, manufacturers of Chicago Pneumatic products in England

C-224

CHICAGO PNEUMATIC AIR COMPRESSORS · BOYER PNEUMATIC HAMMERS · ROCK AND COAL DRILLS · CONDENSERS
LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS · GIANT OIL AND GAS ENGINES · VACUUM PUMPS · OIL BURNERS
PAINT SPRAYERS · TOOL BALANCERS PNEUMATIC HOISTS · SAND BLASTERS

CHICAGO *Depend upon* **PNEUMATIC** *that Name*



Combining ease of operation, safety and speed, with improved design and construction, Bovaird Grip Tubing Spiders now represent the *most* tubing insurance for the money. On *all* wells where running and pulling tubing demands a factor of safety Bovaird Tubing Spiders pay their way. And that means *every* well should have this sure, economical protection.

THE BOVAIRD SUPPLY COMPANY
904 Mid-Continent Bldg., Tulsa, Okla.

FOR SALE BY ALL LEADING SUPPLY HOUSES

BOVAIRD

A good name to tie to~

WE present to those attending the convention of the Natural Gas Assn.,

who have responsibilities directly connected with actual well drilling, our contribution toward your better operating success. We are glad to be able to design and manufacture our product so that its service is a helpful improvement in greater drilling efficiency and economy.

AMERICAN HEAVY DUTY TYPE "C" ROLLER BEARINGS

Heavy Duty Traveling Block built by American Well & Prospecting Co. equipped with American Heavy Duty Type "C" Roller Bearings.

"Oilwell" (Patented) 66" Quadruple Spring Traveling Block equipped with American Heavy Duty Type "C" Roller Bearings.

are the standardized bearings for drilling in Crown and Traveling Blocks and in Reverse Clutches

The Boykin 66" "Greyhound" Traveling Block with guards. This and their 72" blocks are equipped with American Heavy Duty Type "C" Roller Bearings.

The unusually heavy construction and practically wear-free alloy steel of Heavy Duty Type "C" Roller Bearings assures ultimate bearing capacity under all conditions met in drilling. They will handle loads beyond the capacity of plain bearings and other types of anti-friction bearings. They will greatly increase the general efficiency of any crown or traveling block, or reverse clutch. No radical changes in design or machining operations are necessary for their installation.

Get them in the first place; Use them for replacing plain bearings

Write for Catalogue

A typical Heavy Traveling Block built by Lucey Manufacturing Co., equipped with Type "C" Heavy Duty American Roller Bearings.

LARGEST MANUFACTURERS OF ROLLER BEARINGS FOR INDUSTRIAL PURPOSES

SPECIALISTS IN PRODUCTION OF ROLLER BEARINGS FOR THE OIL INDUSTRY

AMERICAN ROLLER BEARING CO.

PITTSBURGH, PENNA.

LOOK THIS BABY OVER and then It's a Burt Swab

An exact duplicate of this swab was put on a well at Best, Texas.

Previous to this they had been spending $30 per day for swab rubbers on another make swab.

The Burt Swab reduced this cost to less than $4 per day.

Can you afford to overlook such a saving.

LET YOUR CONSCIENCE BE YOUR GUIDE

For Sale By I. S. Co. Stores

Mfd. By The Burt Corporation, 202 Clinton Bldg., Tulsa, Okla.

Serving the Petroleum Industry

America's industrial progress during the last half century is perfectly reflected in the Arco Company's manufacturing activities during this period. As new needs have arisen—Arco has formulated and perfected protective products to meet the situation.

Nowhere are requirements for protective products more rigid than in the oil industry, and Arco's years of successful formulation are the best possible assurance of unvarying high quality to meet these severe conditions.

Arco metal coatings, for example, provide a permanently rust-resistive finish for oil tanks, tank cars, auto truck tanks, and pipe lines (either over or underground).

Our technical department will gladly furnish complete information on these and other Arco finishes and protective products.

THE ARCO COMPANY, CLEVELAND, OHIO

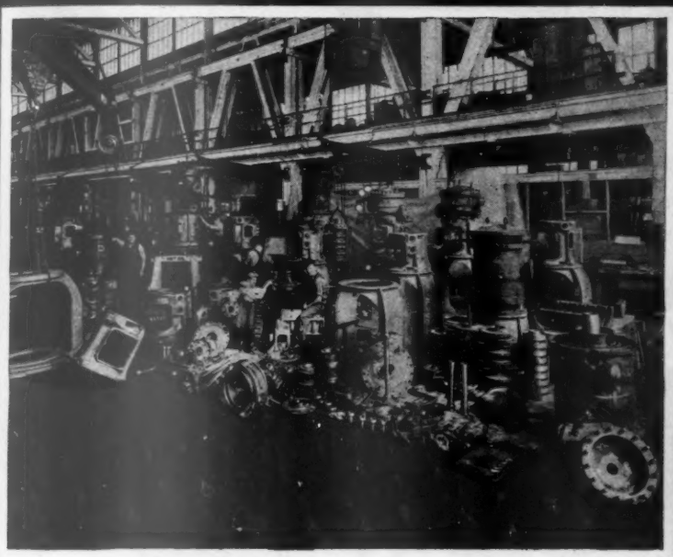
Paints · Varnishes · Enamels · Lacquers

ARCO

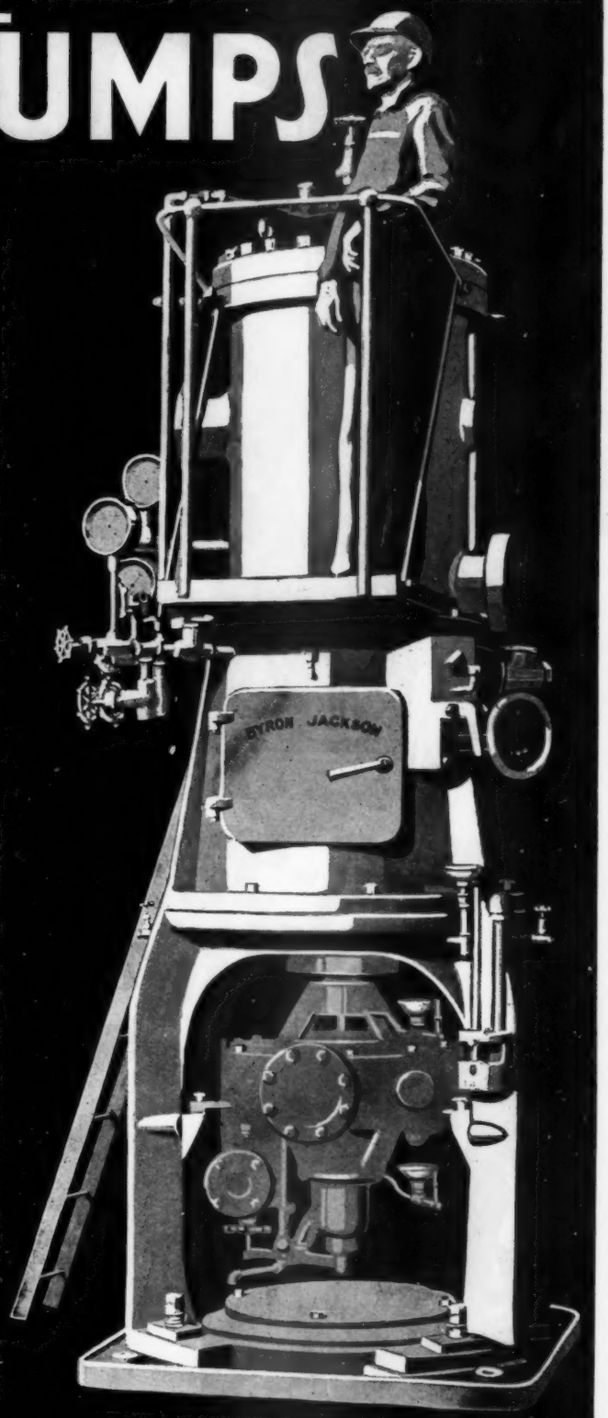
PAINTS VARNISHES ENAMELS LACQUERS

World Standard in Record Time

CENTRIFUGAL HOT OIL PUMPS



Single and Multi-stage Centrifugal Hot Oil Pumps of varying capacities under assembly at the West Berkeley Plant of the Byron Jackson Pump Manufacturing Company.



REPRESENTATIVE LIST OF USERS OF THE BYRON JACKSON CENTRIFUGAL HOT OIL PUMP

Associated Oil Co., Avon, Calif.	Marland Refining Co., Poncah City, Okla.	Roxana Petroleum Corp., Woodriver, Ill.
Houston Oil Co., Camden, Ark.	New Orleans Refining Co., Goodhope, La.	Shell Co. of California Wilmington, Calif.
Indian Refining Co., Lawrence, Ill.	Prudential Oil Co., Baltimore, Md.	Shell Co. of California Martinez, Calif.
Imperial Refining Co., Ardmore, Okla.	Roxana Petroleum Corp., Arkansas City, Kans.	Vulcan Oil Co., Corapolis, Pa.

White Star Refining Co., Woodriver, Ill.

FOREIGN

Curacaosche Petroleum Co., Curacao, D. W. I.	Societe Anonima Astra Romana, Constantza, Roumania
De Bataafsche Petroleum Maatchapp, Balik Papan, D. E. I.	Mitsui & Co., Yokohama, Japan
John Fell & Co., Sydney, Australia	Asiatic Petroleum Corp., Tjepoe, Java

BYRON JACKSON
PUMP MANUFACTURING CO.

FACTORY AND MAIN OFFICE: BERKELEY, CAL.

Branches: San Francisco, Los Angeles, Visalia, Portland, Oregon, Salt Lake City

BYRON JACKSON

CLOSE-UP DILLON NO. 43
Left to right—R. E. Adams, representing Norvell-Wilder Hardware Company; E. J. Harmon, representing Dixie Oil Company, and C. H. French, Gen. Supt. of the Dixie Oil Company.

The Dixie Oil Company
Safeguards their wells with
Valves KEROTEST Fittings

Close-up Kerotest Flanged Union below the cross on Dillon No. 53 of the Dixie Oil Company, Pine Island, Louisiana.

Both Dillon Wells No. 43 and No. 53 of the Dixie Oil Company, Pine Island, La., are Kerotest equipped. The former was a discovery well in the deep sand and blew in November, 1924, with 53,000,000 cubic feet of gas going through 4¼-inch drill pipe. It is 3623 feet deep and has a closed-in pressure of 1680 pounds. Today it is delivering 15,000,000 cubic feet of gas daily to Little Rock, Ark.—a distance of 220 miles, line measurement, without the assistance of a single booster station.

If you want to be sure your wells are properly safeguarded—follow the example of the leading drillers throughout the country. They specify KEROTEST and play safe. Any of the Kerotest distributors will be glad to serve you.

Kerotest Manufacturing Company
Pittsburgh, Penna.

Carried in stock and sold by

GRINNELL COMPANY OF THE PACIFIC
Los Angeles San Francisco

OIL WELL SUPPLY COMPANY
Oklahoma Kansas Colorado Wyoming

NORVELL-WILDER HARDWARE COMPANY
Houston Beaumont Shreveport Fort Worth

Export Distributors:

OIL WELL SUPPLY COMPANY
Pittsburgh New York Tampico London

Is this runaway horse-power a part of your fuel bill?

Many operators, without realizing it, are paying for *wasted* horsepower that can never be used. One simple, absolutely *sure* precaution will assure delivery of the full rated horsepower of your boiler *at all times:*

Install a Eureka Burner!

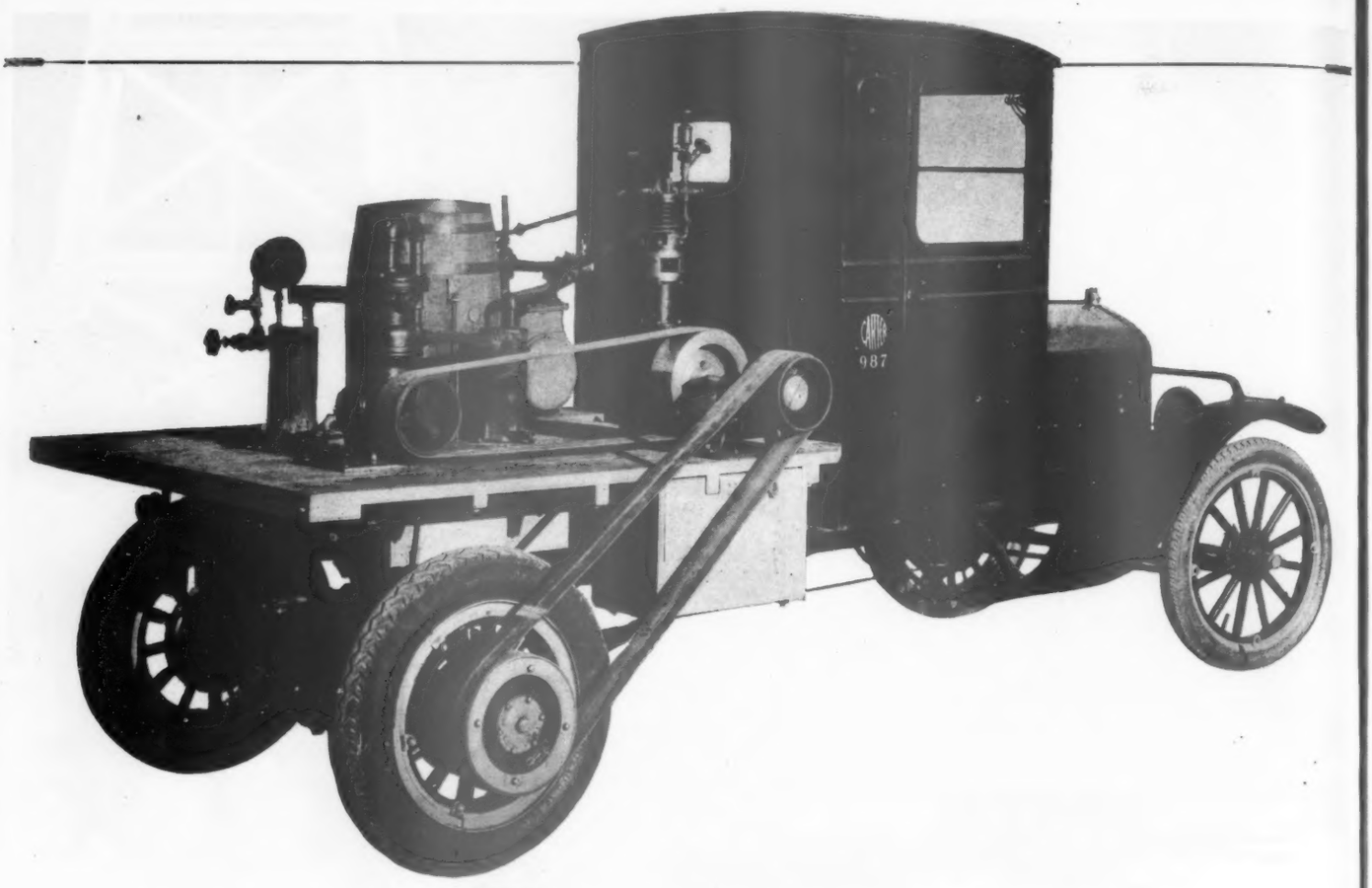
The Eureka Burner will maintain pressure within a range of 5 pounds regardless of the load. Its *constant* efficiency, regardless of load, explains why the Eureka has been able to show fuel savings as high as 69% over many leading makes of burners. The draft control, in the Eureka Burner alone, has been developed to a point of perfection that allows the proper mixing of air and fuel according to the analysis of the gas used. The Eureka Burner produces the highly desirable blue flame with the violet tint, which denotes highest efficiency, on all of the 23 kinds of gas commonly used.

Further information gladly furnished on request.

THE EUREKA BURNER COMPANY
Pawhuska, Oklahoma
Exclusive Burner Manufacturers

Eureka
"THE BURNER WITHOUT AN EQUAL"

The proper burner installation makes a world of difference in your gas bill. In many of the leading companies' boilers, Eureka Burners are saving their initial cost many times over. Most of these big buyers bought their original Eureka Burner after we had demonstrated its superiority in their own boilers. If your burner requirements are large enough to justify our doing so, we shall be pleased to install a Eureka on trial for you.



A NOVEL USE *with practical results*

SOME USES:

Loading Machinery

* *

Erecting Steel Tanks

* *

Loading Boilers

* *

Erecting Derricks

* *

Ginning Pipe

* *

—and countless other profitable uses.

Mark down another score for the R-B Winch—its easy adaptability to belt work.

A large oil producer demonstrates its wide versatility by using the R-B Winch to operate a gas-testing outfit, for determining the gasoline content in gas at the well, mounted on a one-ton Ford Truck. Here, as in many other instances, is proof-positive that the R-B Winch has profit-possibilities undreamed of in any other winch made. A few of the reasons for this superiority are: (1) its simplicity, due to fewer parts, tested and gauged, (2) its location on the truck wheel, the *ideal* location, leaves the entire bed space available for capacity loads, (3) it has *less* frictional loss than any power take-off known. The R-B Winch will drive anything not requiring more horsepower than that developed by the motor. Heavy loading duties, too, are "play the R-B Winch way."

Truck owners in scores of industries have welcomed the "only winch of its kind in the world." Write, we'll tell you about it.

BRADEN STEEL & WINCH COMPANY
TULSA, OKLAHOMA
Sole Manufacturers

THE R-B WINCH

RELIABLE BRADEN WINCHES

Here are four "U.S." Packings built for refinery service—

F.O.P. Asbestos Fibre Oil-Proof Sheet Packing

Recommended for flanges on hot oil, cold oil, benzine, naphtha, gasoline, mineral seal oil, high or low pressure saturated or super-heated steam. It has no equal for high pressure cracking still head gaskets. Will not soften in hot oil at any temperature. The best sheet packing for all types of gaskets on gas or oil engines, compressors, or extreme dry heat conditions.

The only asbestos fibre sheet packing developed exclusively for refinery, gasoline plant and oil industry conditions.

"U.S." Rainbestos High Pressure Packing

Recommended for packing rods against high pressure steam and air. Especially adapted for general service in refineries for stuffing boxes in pumps handling gasoline, hot or cold oils, etc.

"U.S." Peerless Piston Packing

Recommended as the best all-around piston rod packing for saturated steam up to 159 pounds pressure. Particularly adapted for use on high speed engines.

Black Hawk Hi-Heat Metallic Packing

For packing rods against super-heated steam, air, hot oil, tar, pitch, asphaltum, etc. For all extreme pressures and temperatures. Especially adapted for casinghead gas compressor and hot mineral seal air rods.

"U.S." Packings do make a difference—

There's a "U.S." Packing specially built for every refinery need—

Every time a packing goes wrong it means a shut-down for repacking—and a resultant drop in output somewhere along the line.

There *is* a difference in packings. Ask your pump men. Any old packing won't do. Packings that give unfailing service under straight steam often fail to make the grade when they buck up against the "oil test."

Back in the days before Cushing and Burkburnett came in—long before the refineries that followed these fields were thought of—the packing experts of the United States Rubber Company were analyzing the operating problems of the refiner.

We're mighty proud of the fact that a large proportion of the refineries running oil from these famous fields, and the most important fields developed since then, have standardized on "U.S." Packings.

No other packing manufacturer has made such a thorough investigation of the packing requirements of the modern refinery and gasoline plant as has the United States Rubber Company. There is not a condition from the handling of crude in the pipe line to the various pumps carrying gasoline, kerosene and hot oils, down to hot tar, that is not being packed successfully and economically with "U.S." Packing—sheet, gasket and pump.

Refinery records show that "U.S." Packings *do* make a difference.

United States Rubber Company

1790 Broadway (US) **New York City**

OIL FIELD SALES BRANCHES:

Tulsa, Okla.	Pittsburgh, Pa.	Kansas City, Mo.
Houston, Texas	New Orleans, La.	Chicago, Ill.
Dallas, Texas	Los Angeles, Cal.	Memphis, Tenn.
St. Louis, Mo.	Columbus, Ohio	

"U.S." PACKINGS

for every refinery and oil-field need

Any Formation~

shale
sand rock
broken lime
gumbo
shale & boulders
sandy shale
sticky blue shale
conglomerate
austin chalk

In fact, anything but hard rock is dead easy *for* U-S DISC BIT

that can be drilled with a fishtail can be drilled quicker, better and more economically with a U-S DISC BIT

U-S DISC BIT is not a bit for drilling any special formation, it is for use wherever drilling is done by the rotary method.

No matter what part of the world you are in, just remember, U-S DISC BIT will make more than three times the hole possible with a fishtail.

It will save two-thirds of your round trips for bit changing and allow that time to be spent in actual drilling.

It will maintain its supremacy in any formation that can be drilled with a fishtail and make hole in formations impossible to the fishtail.

Remember—U-S DISC BIT drills a straight hole to gauge, reduces fishing jobs, reduces slip cutting of drill pipe, saves wear and tear on equipment and STAYS TOGETHER IN THE HOLE.

Why postpone efficient drilling?
Investigate U-S DISC BIT today!

U-S TOOL SPECIALTY CO.
Dallas, Texas

Mid-Continent Distributors for

U-S TOOL CO.
Manufacturers of Oil Well Tools
Long Beach California

Perfected in every detail

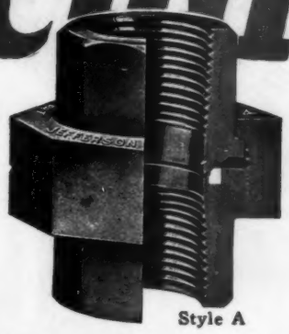
A fitting is no stronger than its weakest part. We realized that exclusive ownership of the *best* seat-ring construction could not alone assure leadership for JEFFERSON Unions and Flanges. We therefore set out to perfect *every detail* of our fittings.

Materials are highest grade brass and air-refined malleable iron. Ball-joints are absolutely accurate and tight, as the parts of each union are ground together and each part is assembled with its mate.

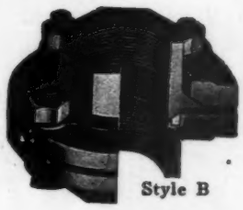
JEFFERSONS are unsurpassed in *any* detail, and their seat-ring construction is *superior* to any other.

JEFFERSON UNION COMPANY
Lexington, Mass.

Handled by all leading oil industry distributors.



Style A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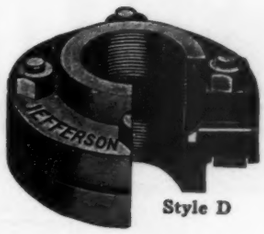
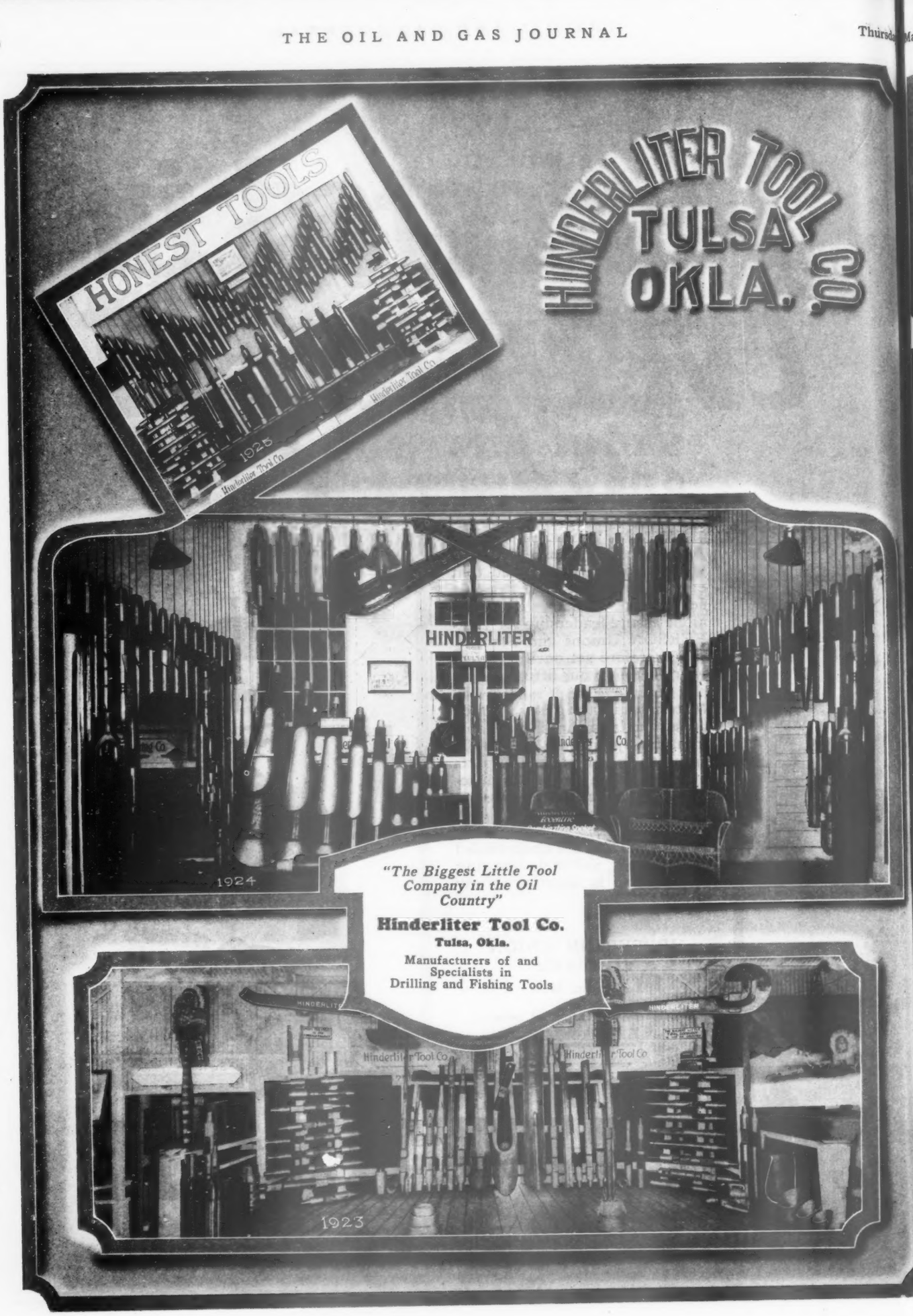


Style D

Style E

JEFFERSON


HONEST TOOLS
1925
Hinderliter Tool Co
HINDERLITER TOOL CO.
TULSA OKLA.
HINDERLITER
1924
"The Biggest Little Tool Company in the Oil Country"
Hinderliter Tool Co.
Tulsa, Okla.
Manufacturers of and Specialists in Drilling and Fishing Tools
1923

The Chain You'll Demand—When You Know its Record

CHAIN BUYERS soon get to know the fine points about chains. Experience and observation teach how to pick a winner.

The high points that made Link-Belt SS-40 Plus and SS-124 Plus Chains the favorites of the driller, are the curled roller, heat treated sidebars, and special nickel alloy steel pin.

Each of these is the result of Link-Belt's many years' practical experience in making super-service drilling chains. Each is partly responsible for the drilling records made with Link-Belt SS-40 Plus and SS-124 Plus Chains. But it's their *combination* in each chain that makes drillers pick SS-40 Plus and SS-124 Plus. Specify genuine Link-Belt Chains—and may the best crew win!

WHEN you know the make-up of a Link-Belt Chain you know why its performance is unequaled. When you use it on your rigs, you'll remember where you got it. Insist on genuine Link-Belt >——< Chains.

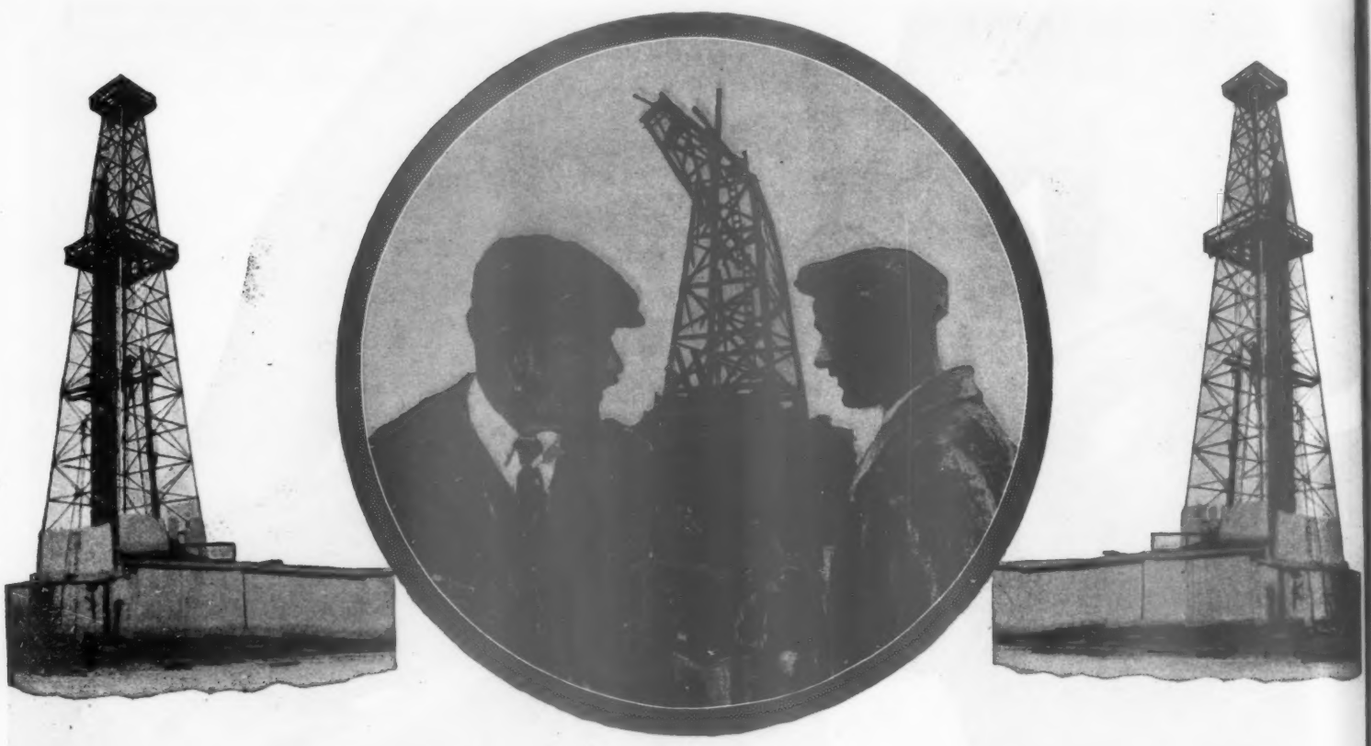
LINK-BELT COMPANY

Leading Manufacturers of Elevating, Conveying and Power Transmission Chains
INDIANAPOLIS, 200 S. Belmont Ave.

2730

LINK-BELT

SS-40+ (Plus) Rotary Chain SS-124+ (Plus)



"Gimme 'IDECOS' Boss"

"This is the third time this month I've been held up while that wooden derrick was bein' repaired. When she *is* runnin' we're always expectin' her to fall in on us any minute. You're losin' money and gettin' little oil. We're losin' time and can't make hole. Why can't we use 'Ideco' Steel Derricks and see the difference all 'round?

"I worked under 'Ideco' Steel Derricks in California and, believe me, they're O. K.! No kicks, no tie-ups, and no lost pay. Everybody liked to work under 'em and the boss was tickled pink with the results.

"When I say *'Idecos,'* I mean *'Idecos.'* Don't let 'em sell anything 'just as good.' They're galvanized structural steel, and ain't got any of the bad habits of other steel derricks! You can put 'em up in half the time of a wooden derrick and move them from one hole to another without any losses. No rust, no paint, no repairs—just good hard-workin' derricks that make it easy on the company's pocketbook and the crew's minds.

"Try us out with 'Ideco' Steel Derricks and then watch our smoke!"

The International Derrick & Equipment Co.

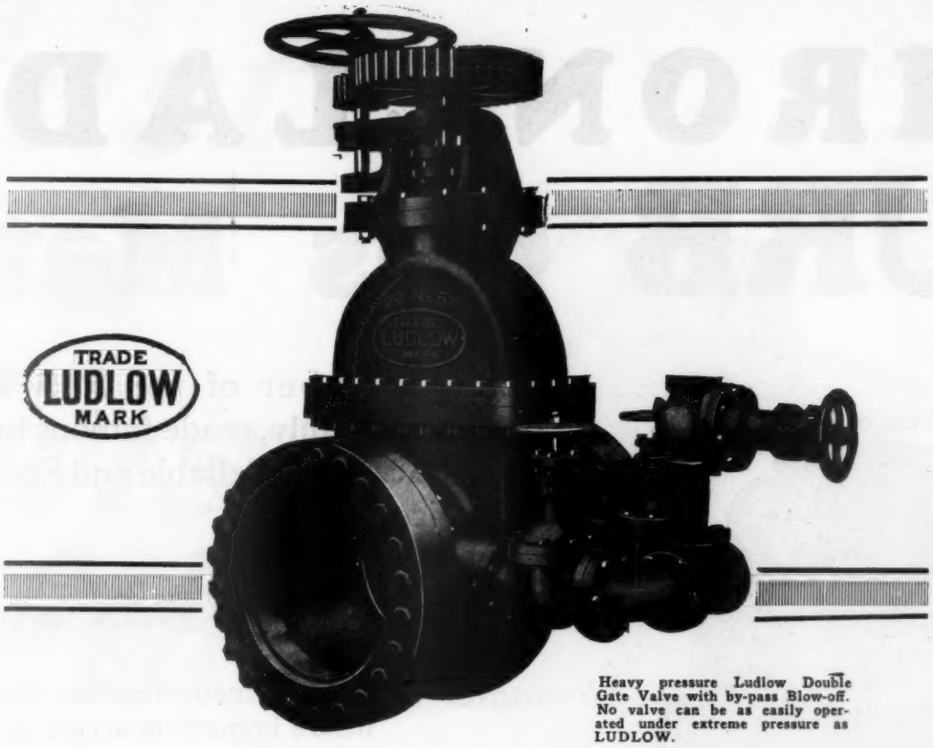
Columbus, Ohio -:- **Torrance, Cal.**

Tulsa	Wewoka	Denver	Shreveport	Houston	New York	Casper	Bakersfield
Dallas	Tonkawa	Smackover	El Dorado, Kans.	Wichita Falls	Oil City	Corsicana	Mexia

California National Supply Co.—Distributors in California

INTERNATIONAL STEEL IDECO DERRICKS (GALVANIZED)

The largest company devoted exclusively to the manufacture of steel (galvanized) equipment for the oil, gas and artesian industries.



Heavy pressure Ludlow Double Gate Valve with by-pass Blow-off. No valve can be as easily operated under extreme pressure as LUDLOW.

LUDLOW OIL & GAS VALVES

Never Fail in Emergency

YOU can absolutely depend on Ludlow Double Gate Valves to do exactly what they are expected to do in any emergency as well as in regular service.

Under the patented Ludlow construction gates cannot be wedged or locked until they are directly opposite valve opening. The stem cannot bind in wedge and there can be no stripping of thread from stem by canting of gates to either side.

Natural Gas Convention

Mr. J. L. Sybrandt, district manager of our Kansas City office, will maintain headquarters at the Mayo Hotel, Tulsa, Oklahoma, during the Natural Gas Convention.

THE LUDLOW VALVE Mfg. Co.

(*Established 1866*)

Factory—Troy, N. Y.

BRANCH OFFICES:
Kansas City, Mo.
Chicago, Ill.

BRANCH OFFICES:
Pittsburgh, Pa.
Boston, Mass.

IRONCLAD CURB Gas Meter

Another member of the well known "Ironclad" Family, made famous by long years of Accurate, Reliable and Economical Service.

Top View of Meter

Clock may be turned to any position

Ironclad Curb Gas Meter

Installation in Box at Curb

Eliminates — Delayed meter reading. Meters at curb insure immediate access, greatly facilitating reading of meters. No delay through inability to gain ready access to houses or necessity of return visits.

Eliminates — Damage to meter and temporary suspension of service on account of extremes of temperatures due to exposed outside settings.

Eliminates — Frequent claims for property damage through leakage of gas between service cock and consumer's house. No claim can be made that a leak from the meter or its connections caused the consumer's property to be destroyed or damaged.

Eliminates — Loss of revenue through leakage of gas from service pipe before reaching meter, when installed in consumer's house.

Prices and Full Information on Application

PITTSBURGH METER CO.

7800 Susquehanna Street, Pittsburgh, Pa.

Sales Offices:

New York, 50 Church St.
Chicago, 612 N. Michigan Ave.
Kansas City, Mutual Bldg.
Columbia, S. C., 1433 Main St.
Seattle, Washington
Los Angeles, Union Bank Bldg.

Just a Twist of the Nut

If the Plug Sticks— A slight turn of the Nut, to the left, actually lifts the Plug from its seat.

If the Cock Leaks— Turning the Nut to the right draws the Plug down into the Body.

"OILWELL" ESTD 1862 TRADE MARK REGISTERED

For safety, continuous service, and the elimination of replacements, use the "OILWELL" Bolton Iron Stop Cock.

Made in 1-inch, 2-inch, and 3-inch sizes.

2-inch and 3-inch sizes also made with locking device, known as Bolton Lock Stop Cocks.

Inquire at any of our 100 Branches.

OIL WELL SUPPLY CO.

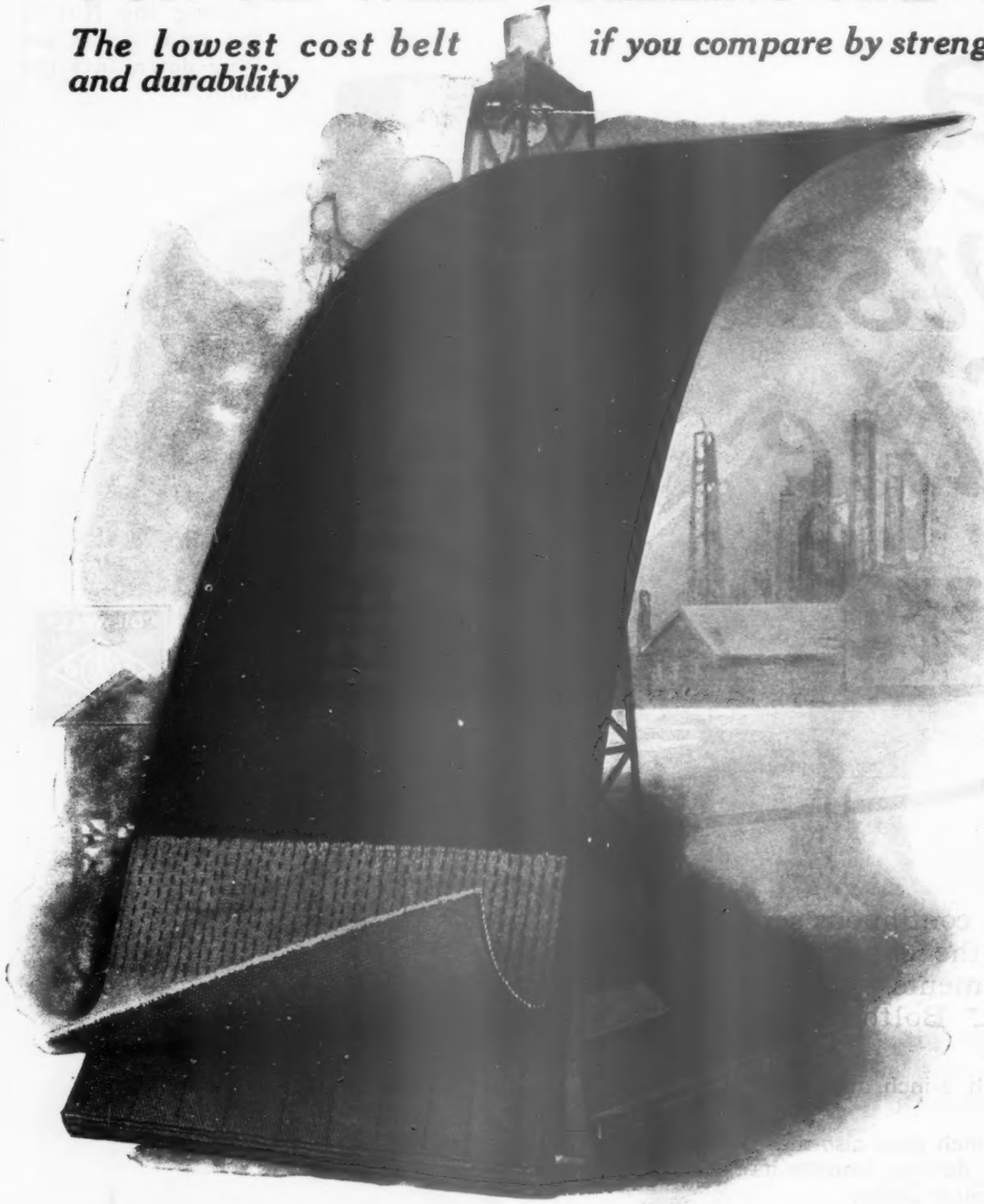
NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

PETROL BELT

FOR OIL WELL DRILLING AND PUMPING

The lowest cost belt if you compare by strength, weight and durability



The breaking strength of PETROL BELT is greatly in excess of that required by the A. P. I. Specificati

MANUFACTURERS

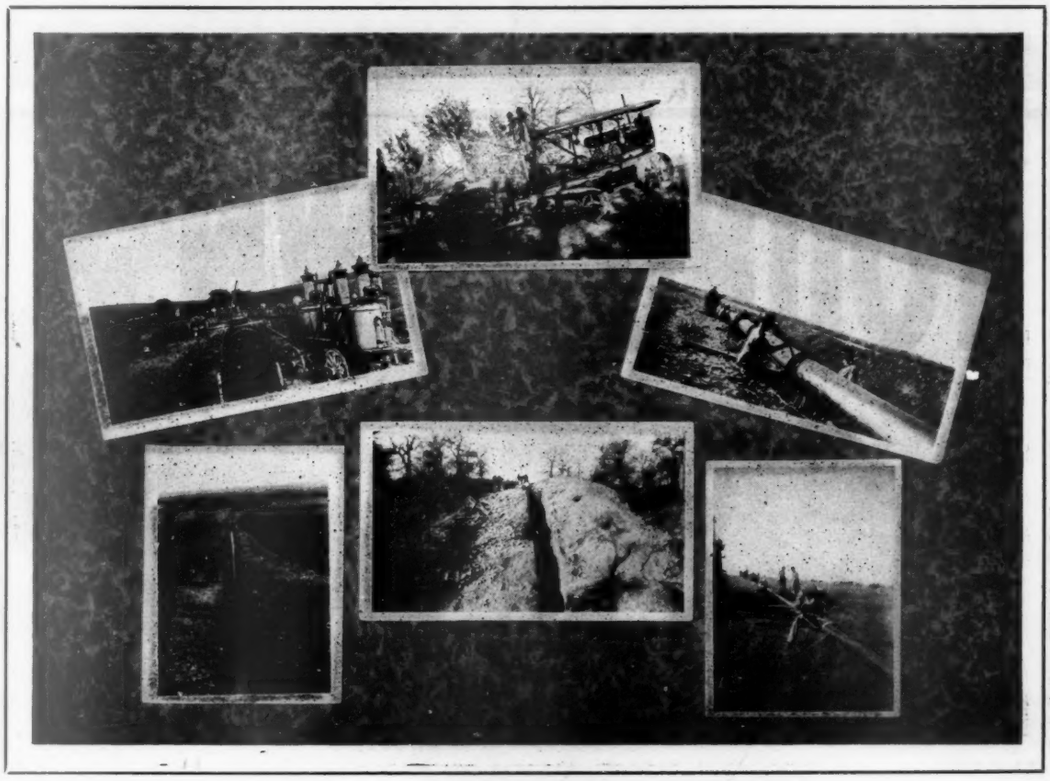
VICTOR BALATA & TEXTILE BELTING CO.

NEW YORK OFFICE and WAREHOUSE
38 MURRAY STREET : NEW YORK

CHICAGO OFFICE AND WAREHOUSE
345-359 W. AUSTIN AVE. CHICAGO, ILL.

Factories: EASTON, PENNA.

PETROL BELTING AND PETROL CL



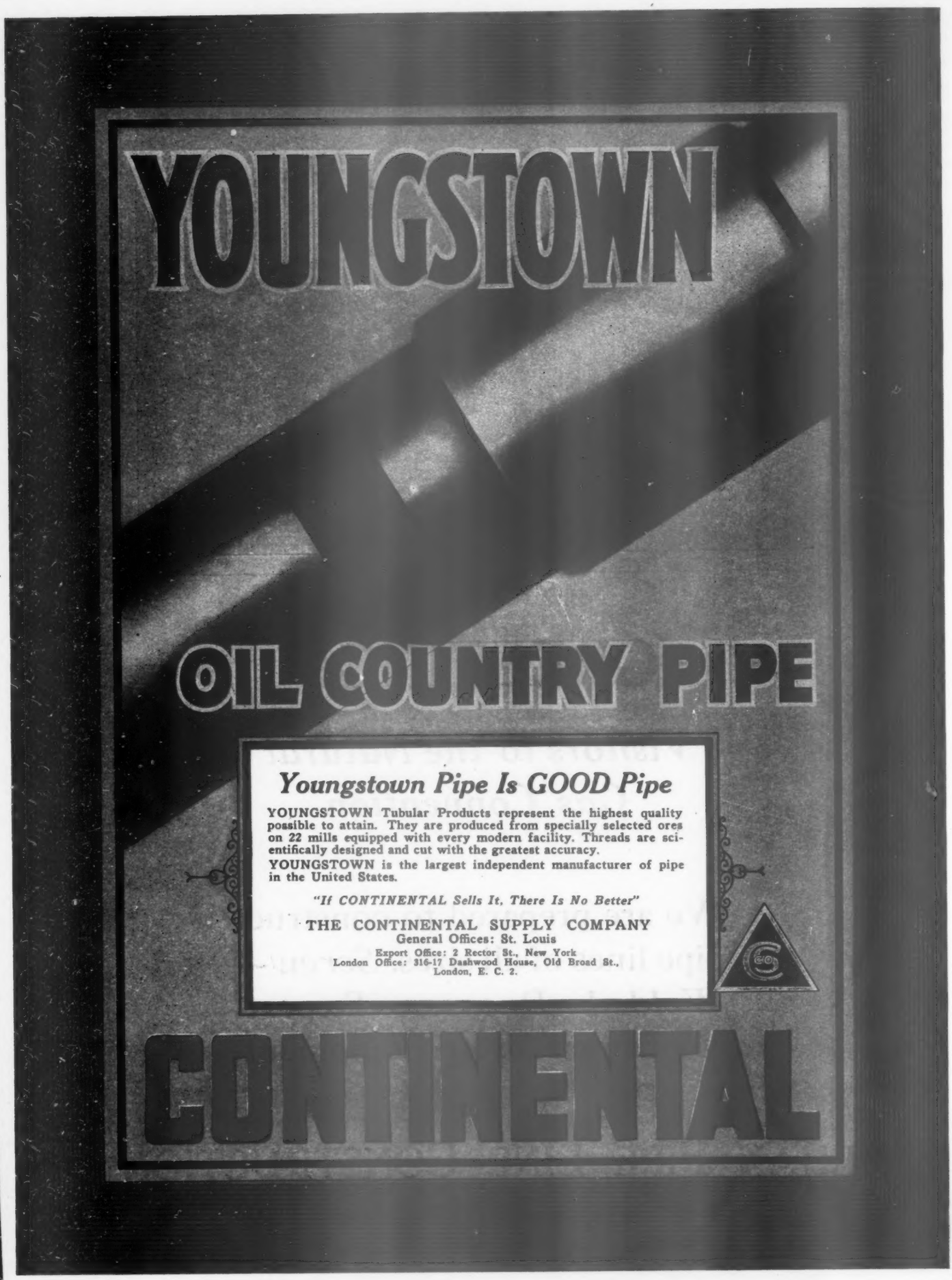
GREETINGS

Visitors to the Natural Gas Convention

We are prepared to construct pipe lines of all sizes. *Screw—Welded—Dresser*—Expert Workmen—Best Equipment

SHEEHAN PIPE LINE CONSTRUCTION CO.

TULSA, OKLAHOMA


YOUNGSTOWN
OIL COUNTRY PIPE
Youngstown Pipe Is GOOD Pipe
YOUNGSTOWN Tubular Products represent the highest quality possible to attain. They are produced from specially selected ores on 22 mills equipped with every modern facility. Threads are scientifically designed and cut with the greatest accuracy.
YOUNGSTOWN is the largest independent manufacturer of pipe in the United States.
"If CONTINENTAL Sells It, There Is No Better"
THE CONTINENTAL SUPPLY COMPANY
General Offices: St. Louis
Export Office: 2 Rector St., New York
London Office: 316-17 Dashwood House, Old Broad St., London, E. C. 2.
CONTINENTAL

"18 Miles to the Gallon"

Ford
Ton-Truck
with Closed Cab and Stake Body
$515
f. o. b. Detroit

"With our Ford ton truck we keep our customers well supplied with lubricating oils," says F. H. Dinkelman, Secretary-Treasurer of the Eureka Oil Company at Reading, Ohio.

"On an average, ten customers are served with this unit every day. Even in this hilly territory, hauling 5 or 6 drums of 55-gallon capacity an average of *18 miles to the gallon of gas*, is maintained. Return load of 23 empty drums can be carried on the standard stake body."

Representative oil companies in every section of the country are using Ford ton trucks for the economical delivery of their products.

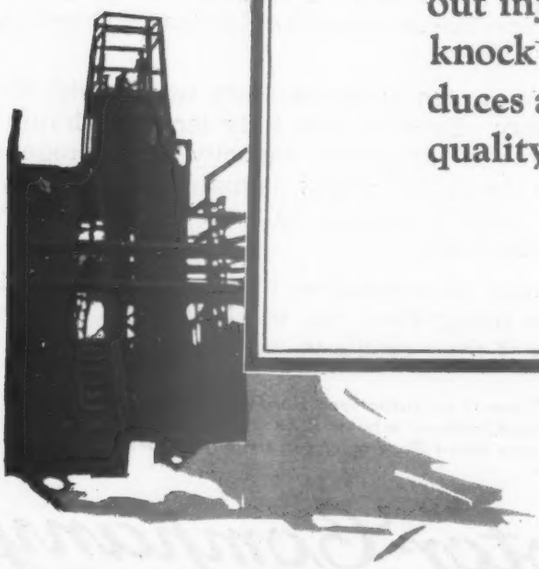
There is an authorized Ford dealer in your neighborhood who will be glad to tell you more about Ford trucks in the oil business.

Ford Motor Company
Detroit, Michigan

CARS TRUCKS TRACTORS

With Forty-Three Units NOW Installed, or Contracted For

CRACKED gasoline, due to the presence of valuable anti-knock hydrocarbons, is now recognized to be better motor fuel than the straight run product. These hydrocarbons make it difficult and costly to refine by the old methods. Vapor Phase Refining has recently been developed for the purpose of treating cracked gasoline without injuring its valuable anti-knock properties, and it produces a greater yield of higher quality anti-knock gasoline.



THE GRAY PROCESSES CORPORATION

961-975 FRELINGHUYSEN AVENUE

NEWARK, N. J.

GREETINGS

—TO OUR

FELLOW MEMBERS

OF THE

NATURAL GAS ASSN.

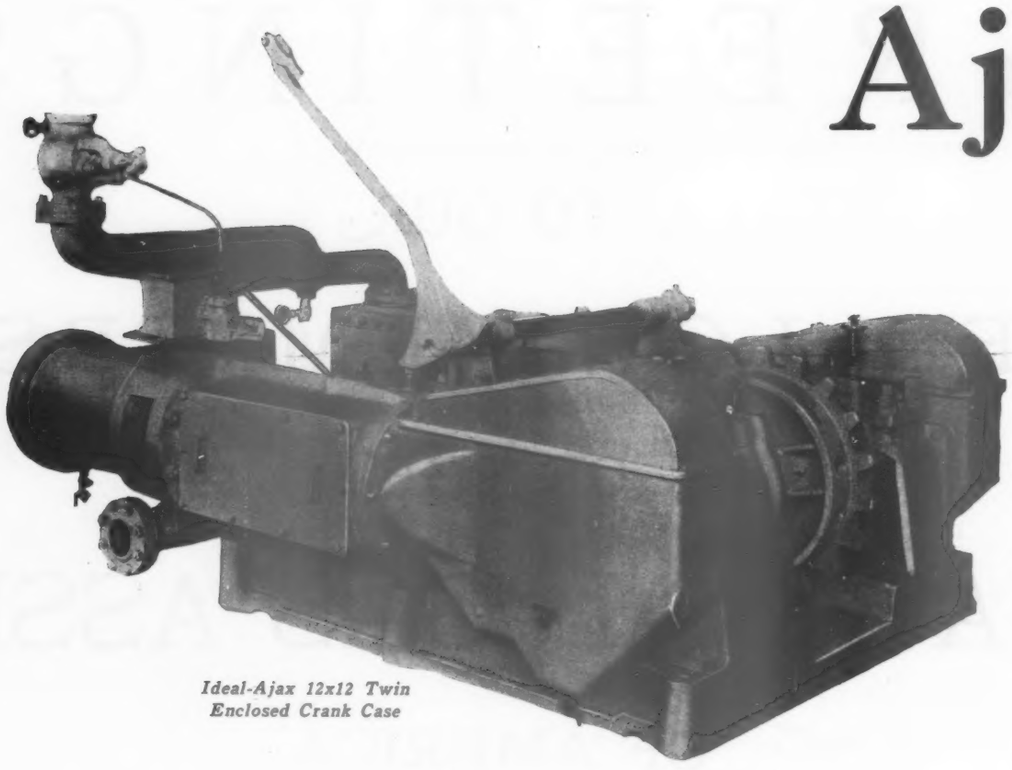
OF AMERICA

WE heartily welcome you to our great Mid-Continent district for a REAL CONVENTION

LONE STAR GAS CO.

HEADQUARTERS
DALLAS, TEXAS

Ajax



Ideal-Ajax 12x12 Twin Enclosed Crank Case

LOOK back over your own experience with drilling engines. Remember how, as drilling for oil has gone deeper and become more difficult, the Ajax Engine has constantly been improved to meet new conditions.

AJAX ENGINES

IDEAL-AJAX

Insist on Genuine Ajax Replacement Parts

Twenty-six 16" stroke Ingersoll-Rand Gas Compressors installed at the Industrial Fuel & Supply Company, Signal Hill, California.

Gas Compressors and Vacuum Pumps for Natural Gasoline Recovery

Today there are thousands of I-R Gas Compressors and Vacuum Pumps giving continuous, reliable service in the various oil fields of the world. There is a neighboring I-R branch that will give you complete information.

INGERSOLL-RAND COMPANY, 11 BROADWAY, NEW YORK CITY

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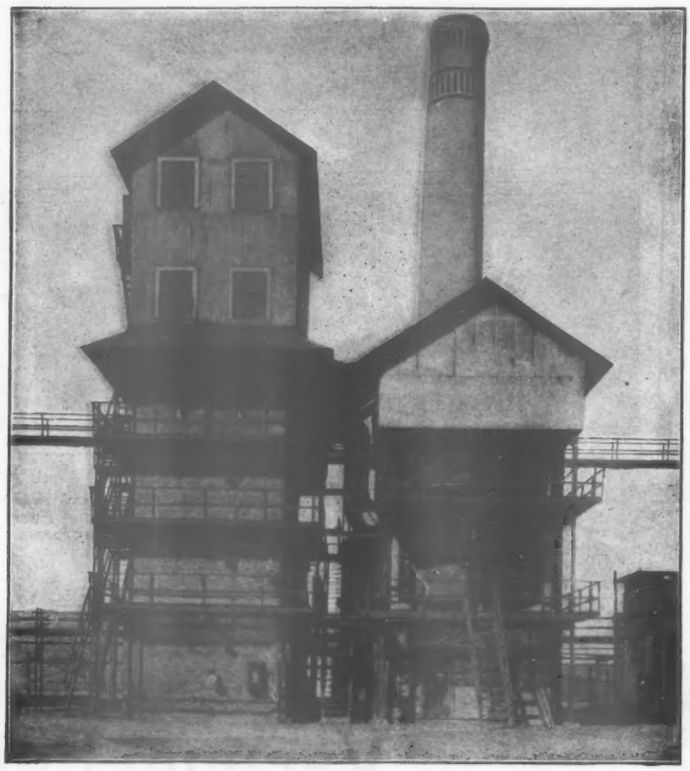


Battery No 3. One of the Holmes-Manley Units at The West Tulsa Works of The Texas Company

This Battery holds the Record for Long Runs

Run 36

From 6:00 A. M., 10-28-23 to 8:00 P. M., 12-30-23

Under pressure 1,526 Hours.

Charging Stock from Storage	Bbls.	Per Cent
Fresh Gas Oil	44,457	51.44
Cycle Gas Oil	41,967	48.56
Total	86,424	100.00
Yield		
Naphtha Distillate	32,387	37.48
Pressure Bottoms	51,491	59.58
Wet Gas—4,753,320 Cu. Ft. (3,159 Ft. per Bbl.)	1,505	01.74
Dry Gas—11,031,276 Cu. Ft. (4,702 Ft. per Bbl.)	2,346	02.71
*Coke—25,110 Lbs.	82	00.09
Total	87,811	101.60
Gain	1,387	01.60
Total Charge	86,424	100.00

Rate charged per hour 56.63 Barrels.
Average Operating pressure 240 Pounds.
Total Fuel Consumed 5.45 Barrels (Per 100 Bbls. charged).

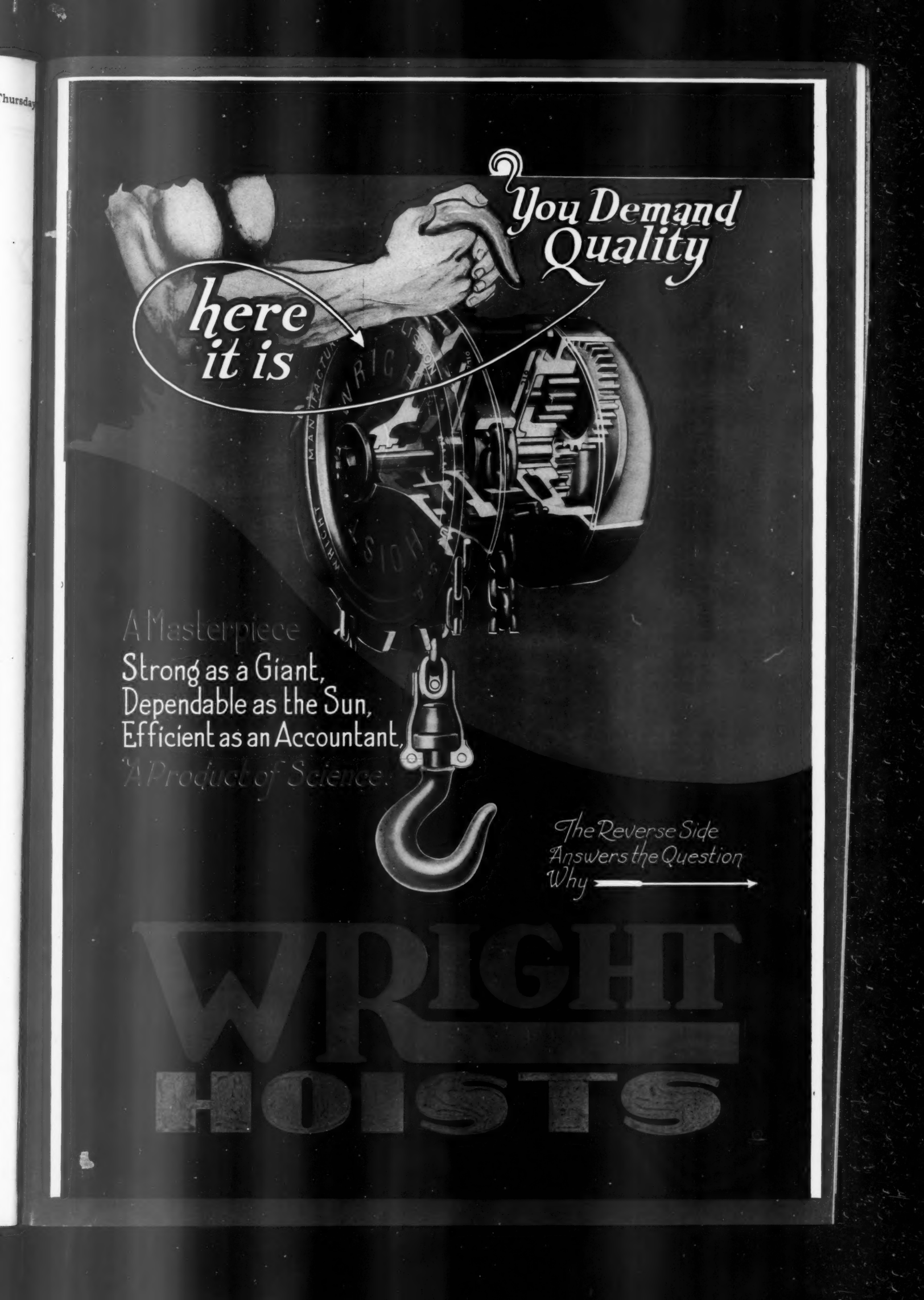
Tests of Naphtha Produced

Gravity ..... 60.5 A.P.I.

A. T. S. M. Distillation

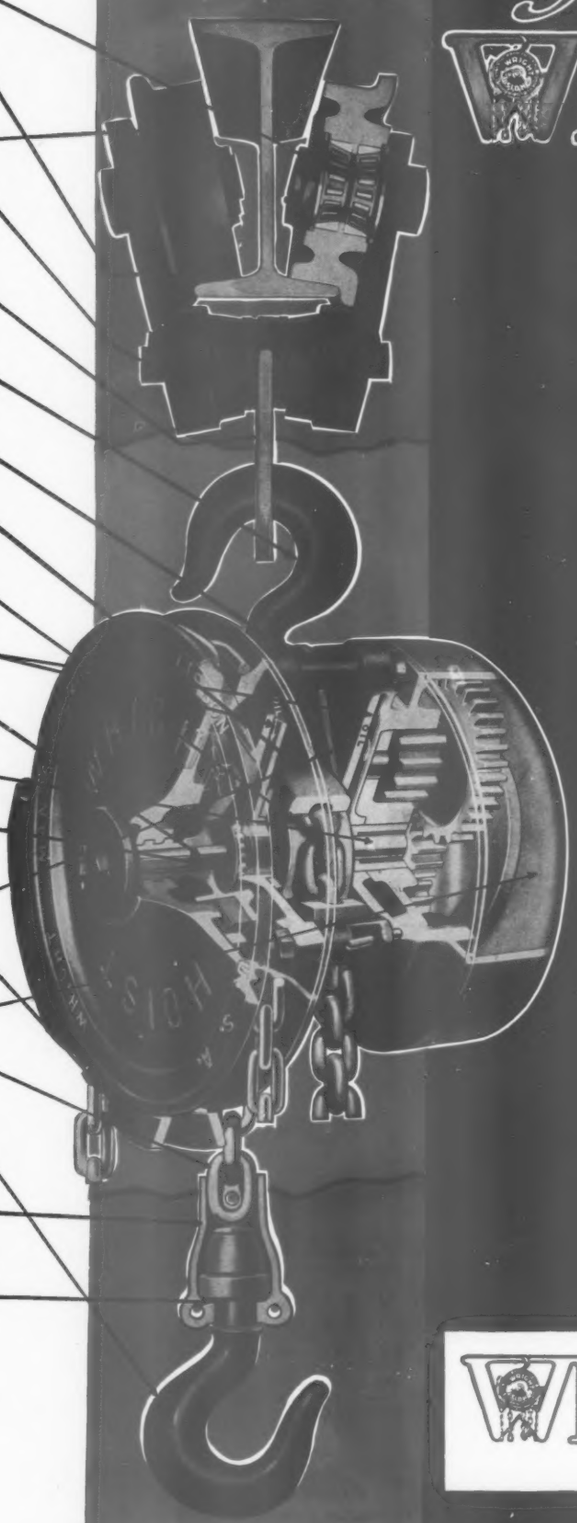
Initial	84°F
20%	189°F
50%	279°F
90%	394°F
End Point	414°F

*Minimum Coke Formation makes such Long Runs Possible


You Demand Quality
here it is
A Masterpiece
Strong as a Giant,
Dependable as the Sun,
Efficient as an Accountant,
A Product of Science.
The Reverse Side Answers the Question Why
WRIGHT HOISTS

21 Points Plus of Hoist Superiority found in the WRIGHT

1. **TIMKEN TAPERED ROLLER BEARINGS**
   Eight to each trolley.
2. **STEEL SIDE PLATES**
   Bumpers protect wheel flanges and treads.
3. **CHILLED TREAD WHEELS**
   Absolute roundness insures ease in handling load.
4. **STEEL EQUALIZING PIN**
   Permits placing trolley on I-Beam at any point and insures equal distribution of the load on the four Wheels.
5. **STEEL HANGER PLATE**
   May be eliminated and hook hung on equalizing pin to save headroom.
6. **STEEL HOOK—DROP FORGED—PROOF TESTED**
   The strongest part of the hoist. This hook never opens to drop the hoist and load.
7. **STEEL DROP FORGED CROSS HEAD**
8. **SAFETY LOAD CHAIN GUARD**
   Completely shrouds the upper half of load wheel, holding six links of load chain in wheel at all times.
9. **STEEL LOAD WHEEL**
   Special analysis electric steel casting, annealed.
10. **OIL TUBES**
    To insure positive and easy lubrication at vital points.
11. **MAIN DRIVING SPINDLE AND PINION**
    Upset forging S.A.E. steel 1035—heat treated.
12. **BRONZE BUSHED LOAD SHEAVE**
13. **BALL BEARING DRIVING SPINDLE**
    Where speed is greatest. Not subjected to heavy and shock loads. Eliminates wear on this part.
14. **STEEL SUSPENSION PLATES**
    An extra precaution to care for heavy overloads.
15. **NON FOULING HAND CHAIN GUIDE**
    (Malleable Iron)
16. **GEAR COVER—EXTRA HEAVY**
    Pressed from ⅛" plate. Insures permanency.
17. **STEEL CHAIN—ELECTRIC WELDED**
    Special heat treated and proof tested. An elastic limit 4½ times rated capacity, and breaking strength 6½ times rated capacity
18. **STEEL HOOK—DROP FORGED—PROOF TESTED**
    Never opens to drop the load.
19. **DETACHABLE STEEL COUPLING—DROP FORGED**
    Completely enclosed Ball Bearing. Easily detachable to renew chain. Load is *not* held on connecting bolts but by the forgings.
20. **BALL THRUST BEARING ON BOTTOM SWIVEL HOOK**
    Permits easy swiveling of load. Insures load chain hanging straight and feeding perfectly straight into load sheave pockets. This insures longer life to chain and wheel the greatest point of friction and wear.
21. **OIL CUPS SPRING COVER IN ALL OIL HOLES**



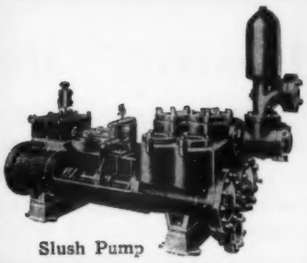
Ask Us About Them

WRIGHT MANUFACTURING COMPANY
LISBON, OHIO

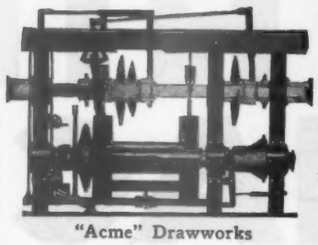
TITUSVILLE OIL COUNTRY MACHINERY

No. 6 Rotary

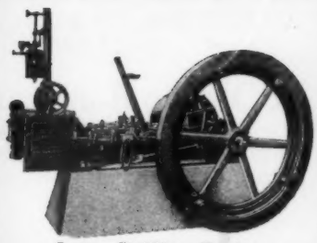
"Acme" Swivel



Slush Pump



"Acme" Drawworks



Steam Drilling Engine

A complete line of rugged, powerful equipment embodying all of the most modern refinements of rotary manufacture,—quality, strength, workmanship and design.

Titusville Units are daily setting new high standards for performance and economy of operation in every field.

They make the hard jobs easy —ask any Continental man for particulars. It pays to use the best.

"Acme" Twin Cylinder Engine

Boilers

The TITUSVILLE IRON WORKS Co.
TITUSVILLE ~ PENNA.

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Titusville Acme Rotaries Acme Swivels and Speed Draw Works High Pressure Boilers Crown Blocks Slush Pumps

RUGGED ~ ENDURING

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PORT
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NATIONAL
No. 3 Portable Drilling Machine
Recommended Capacity 3500 Feet

NATIONA
COM

B&B Patentsteel Drilling Lines

Till the Well Comes In

Spud 'er in. Then let a B & B Patentsteel Drilling Line see the job all the way through.

B & B Patentsteel Drilling Lines, because of their strength, are preferred in the deep hole districts where a fishing job can eat up a tremendous amount of money.

You'll make good time with "Patentsteel." The line is full of spring. And we have laid the line "soft" to keep the kinks away.

B & B Patentsteel and other good drilling lines can be made promptly to order to suit conditions in your particular field. Write for Catalog K2 and name of nearest distributor of B & B Drilling Lines.

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EMCO METERS for GAS IN

Interchangeability
An Exclusive Feature of EMCO
Large Capacity Meters

You can eliminate delays—expense—added costs and worries by using the one meter with the interchangeable mechanism.

EMCO Large Capacity Meters are positive and accurate—in case of trouble you merely take off the top—lift out the working parts—put in a new set and the job is done—not over a half hour for what is generally a half-day job.

The many advantages accruing to users of EMCO Large Capacity Gas Meters because of this removable valve plate cannot be overestimated, and result in large economies in time and labor,—without taking into consideration the fact that the ability to replace a new mechanism, accurately adjusted and minutely calibrated (without disconnecting the meter from the line) insures practically continuous service at all times.

Let us send complete facts.

EQUITABLE METE
PITT
— P

EMCO PRODUCTS
Include
Emco Cast Iron Gas Meters
Emco Large Capacity High Pressure Type Gas Meters
Wylie Proportional Meters
Emco Curb Box Meters
Emco Balanced Valve Regulators
Pressure and Volume Recording Gauges
And other similar equipment
used in the gas industry.

Gumbo Buster 66-inch

Roller-Bearing

Traveling Block

With the large three-speed draw works now used, the extra weight of the Gumbo Buster 66-inch traveling block is a decided advantage. It not only INCREASES THE SPEED with which the block will run down from the top of the derrick, but also tends to keep the wire more evenly and tightly wound on the drum.

All sheaves are extra large (36 inches).

All projecting nuts are guarded and tapered.

The center pin is set above the center line of the block. Every sheave bearing is oiled with cup grease that is forced through an individual oil hole by the Alemite system.

The caged roller bearings are extra large and strong; each bearing retains over a pound of hard oil.

SOLD ONLY BY

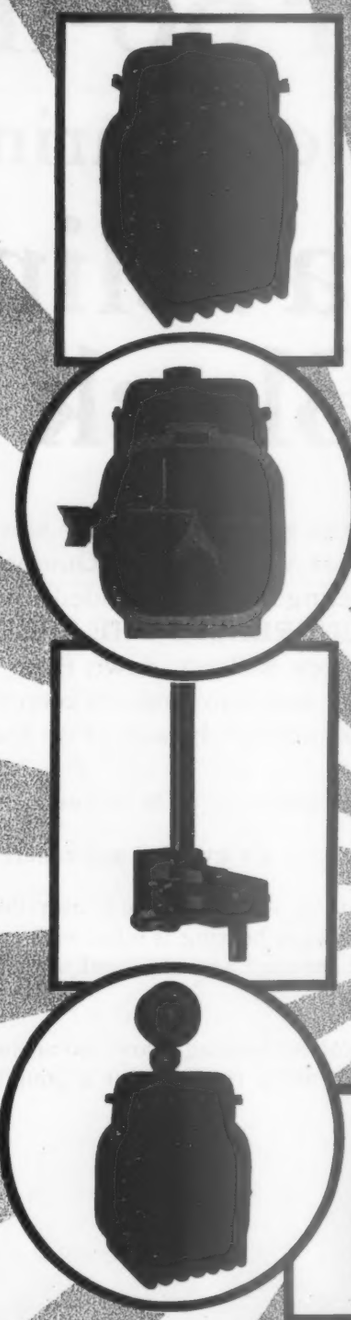
Republic Supply Company

OIL AND GAS WELL SUPPLIES

ROTARY AND CABLE TOOLS

OKLAHOMA TEXAS ARKANSAS LOUISIANA

This New POSITIVE Makes Metric of Equipment for



For every type of measurement; gases, liquids, vapors; in large or small volume; under high pressure, low pressure, or vacuum; there is a Metric Meter designed and built which will give constantly accurate, continuously satisfactory service. This "most complete" line of meters may be classified in a general way as:

METERS
- Demand Limiting
- Domestic
- Drilling Well
- Flow
- Laboratory Test
- Orifice

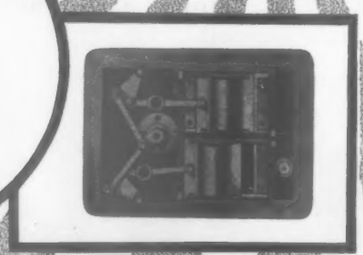
GAUGES
- Pressure Recording
- Siphon or U
- Test
- Vacuum and Pressure Recording
- Volume and Pressure Recording

GAS FILTERS
METER PROVERS
VALVES

The Metrics in greatest use are illustrated to the right while the details of the newest achievement in meters—the 2,500-ft., and 4,000-ft. Metrics—are shown on this page. As a unit they represent the best apparatus for measuring service that the efforts of the largest meter makers have been able, in 38 years, to perfect.

Individually each Metric Meter stands high in its respective field. For accuracy they are noted; for dependability they are widely known; for all around quality they are recognized as the standard for all measuring devices in the Oil and Gas Industries.

WESTCOTT & GREIS, Inc.
TULSA
DALLAS HOUSTON LOS ANGELES

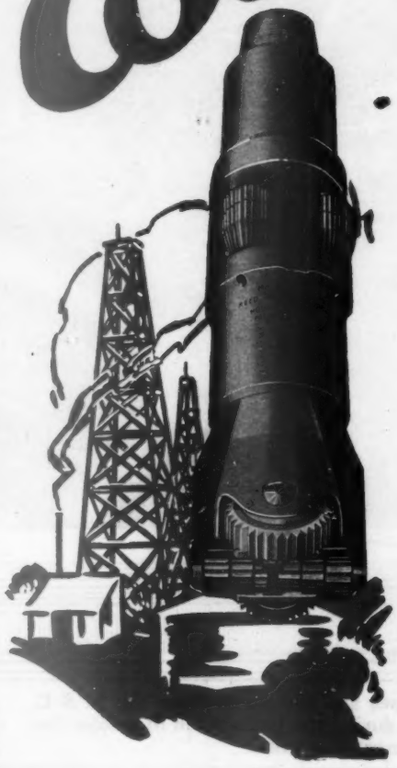


METRIC METAL WORKS
of the American Meter Company, Inc.
ERIE · PENNSYLVANIA · U·S·A

A Few Years Ago ~

A Revolutionary Innovation In Rock Drilling

Today ~



A Necessary Part of the Drilling Equipment in any Rotary Field ~ ~

The cross-roller action of the cutters with the full force of the slush column descending directly upon them makes the Reed Rock Bit a tool that will penetrate with ease even the hardest rock.

The finest of alloy steels—carefully machined and properly heat treated—give this bit the necessary hardness to withstand continued operation, considerably lessening the "time out" generally required for replacement of the quickly worn out cutting edge of ordinary bits.

By increasing the footage rate while the bit is at the bottom of the hole, by cutting down on "time out" for changing bits, and by always making a *full-gauge hole,* the Reed Rock Bit plays a very important part in reducing footage cost when drilling in hard rock.

Reed Rock Bits

Reed Roller Bit Company

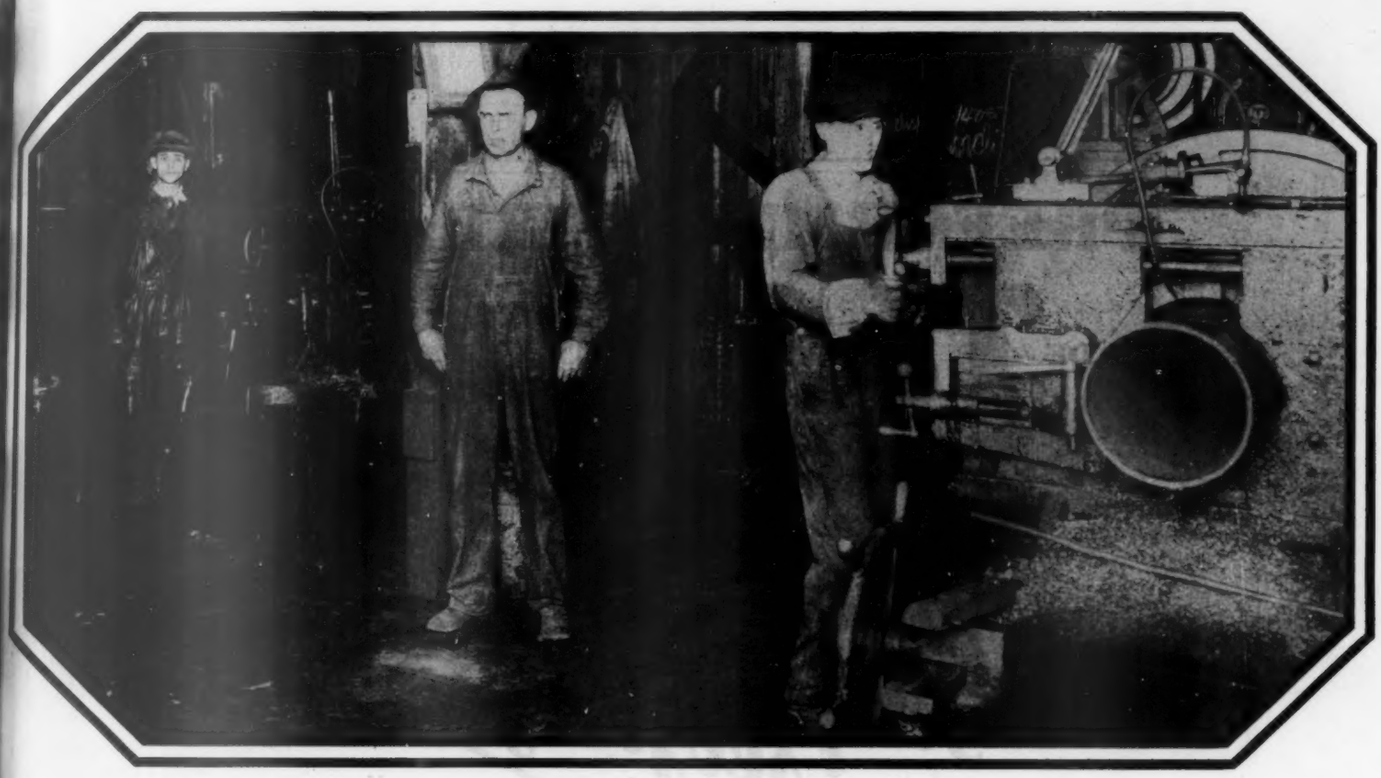
HOUSTON LOS ANGELES

OLD CUSTOMERS BRING NEW ONE

The compressor ends of five 1,000 B.H.P. Cooper gas engines built by The C. & G. Cooper Company, Mt. Vernon, Ohio, installed during the last year in Magnolia Gas Co.'s Latex, Texas, Compressor Station.

COOPER GA

THE OLD ONES KNOW, THE NE W ONES SOON LEARN, THA



These boys say so

IN Tulsa, the Feenberg Pipe & Supply Company has four B & K Pipe Threading Machines. They run 'em hard — feed 'em pipe without mercy. And they like 'em. These boys say so. Graves, the chap with thumbs in pockets, who is shop foreman, says he is strong for B & K machines because they require less grinding of burrs and less shut-downs. And he's right.

Go through any of the fields and you'll find that shop men prefer B & K Pipe Threading Machines because they are simplest, give least trouble and produce perfect threads cheaply. Write for our complete catalog which describes the twenty distinct types and sizes.

PEERLESS B&K DUPLEX P.D.Q.C

Bignall & Keeler Machine Works
of the N. O. Nelson Mfg. Co.
Edwardsville, Ill.

more threads-faster

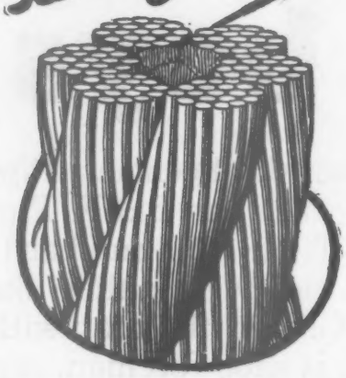
OGJ 5-20 GRA1

PREFORMED WIRE ROPE

TRADE TRU-LAY MARK

[Reg. U. S. Pat. Office]

the ends require no seizing



Tru-Lay Brand Wire Rope will not unstrand and resists kinking. Every user of wire rope in the oil field knows what this means in ease of handling and lower installation costs —especially in connection with Rotary Drilling Cables, Casing, Sucker Rod and Tubing Lines,—and only Tru-Lay Brand has this advantage.

Because of its preformed construction, strand loads are distributed equally and internal locked-up stresses, inherent in ordinary wire rope, are removed. It will resist nigh stranding and kinking and will render longer service as well as reduce expensive lay-ups for replacements.

Let us prove this to you. Write for a foot length sample and interesting literature.

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AMERICAN CABLE COMPANY, Inc.

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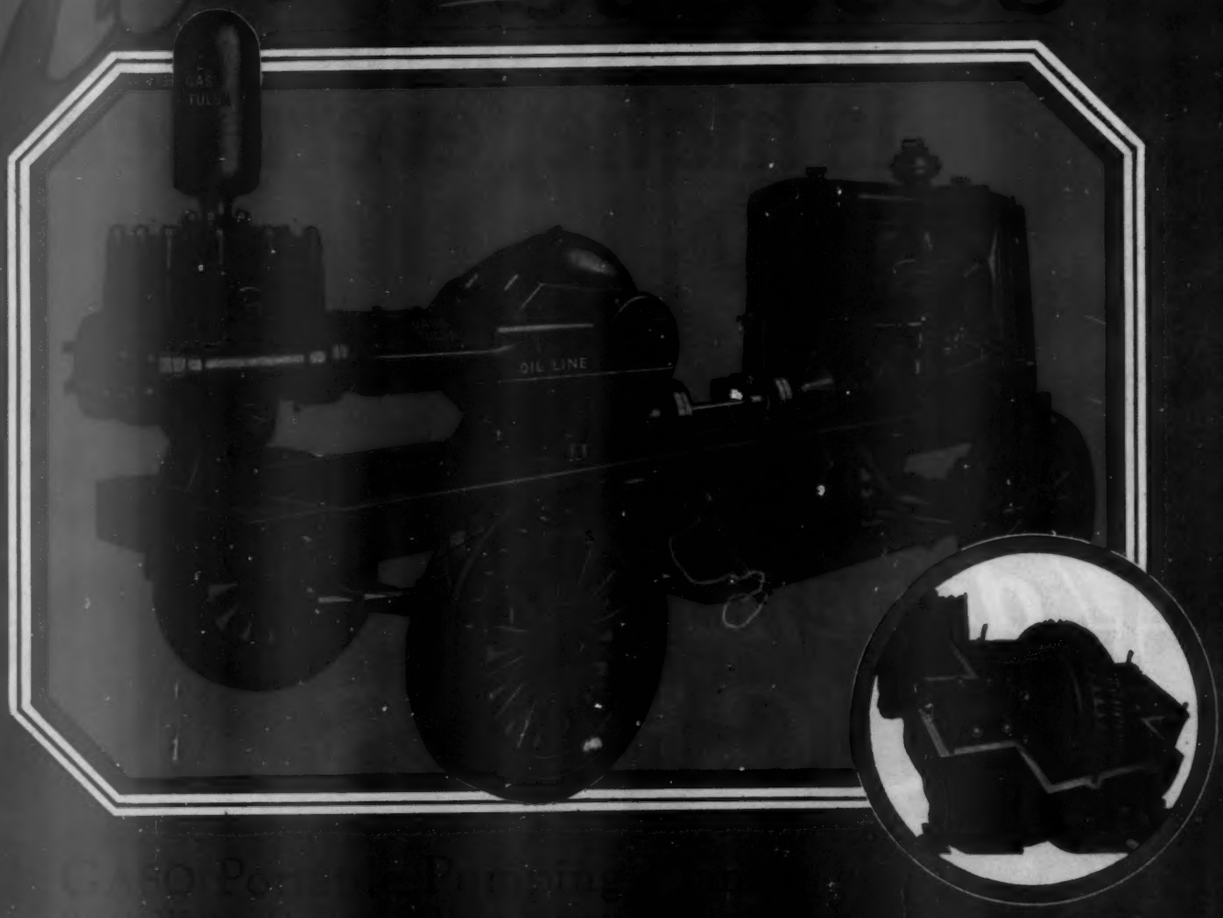
New Butler Instant Success



GASO Pump

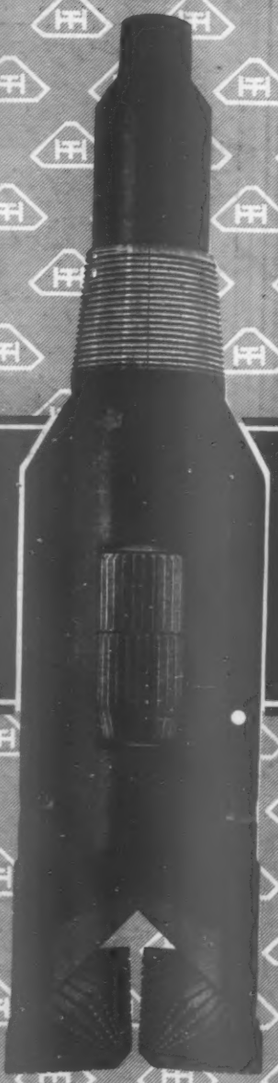
GASO PUMPS

Because the standard of quality of material is higher every year

you can depend on the

HUGHES ROCK BIT

for all rock drilling



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